



21<sup>st</sup> September 2012

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Dear Patrick

**Business Tax Working Group Discussion Paper**

Thank you for the opportunity to comment on the Business Tax Working Group (BTWG) Discussion Paper dated 13<sup>th</sup> August 2012, and for the opportunity of an AMEC delegation to meet with the Chairman, Mr Chris Jordan AO in Perth on 12<sup>th</sup> September.

It is understood at the conclusion of that meeting that Mr Jordan AO had a greater appreciation of the industry and of the potential unintended consequences of a premature decision on the proposed amended taxation arrangements.

As you would be aware, the Association of Mining and Exploration Companies (AMEC) is the peak national industry representative body for hundreds of mineral exploration and mining companies within Australia.

AMEC is particularly concerned that the consultation is being rushed and that insufficient time has been provided for AMEC to adequately consult with its broad membership base on these critically important proposals.

Individual companies have also not had time to fully consider and assess the potential financial, social and investment ramifications on their projects.

A fundamental requirement for the minerals exploration and mining industry is the need for clarity and certainty for investment and business decision making processes. This is particularly relevant to public policy settings, including the need for a stable, efficient and simple taxation regime.

Unfortunately, over the past few years the Australian Government and various State and Territory Governments have continued to analyse, review and amend the policy settings to such an extent that a significant amount of uncertainty has been created.

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This uncertainty has permeated into investment and business decision making processes to such an extent that there are an increasing number of examples of planned mine expansions and new projects being deferred, cancelled or transferred to competitive overseas jurisdictions.

The recent introduction of the Minerals Resource Rent Tax on iron ore and coal, the carbon tax and reduced fuel tax credit arrangements have significantly contributed to this uncertainty, as well as directly affecting project economics and business risk profiles.

In addition, the current state of the industry indicates that it is faced with:

- increasing operating costs (labour, fuel, transport, power; and a range of levies, royalties and cost recovery processes),
- very tight and competitive global financial markets in accessing equity capital,
- reduced share prices and market capitalisation, and
- reduced productivity and future growth potential.

All of these signs are of concern for the Australian economy as tax and other revenue streams, jobs, social and economic dividends will be threatened in the short term unless some relevant long term public policy action is taken, rather than short term tax changes.

It takes an average of 7 years to convert a discovery into a mining operation. During this period the project economics (including cash flow projections, commodity prices, exchange rates, taxes and royalties) and the project business case is the subject of considerable due diligence and financial scrutiny in order to provide directors, financiers and investors with the required level of confidence to proceed with the project.

Constant changes or threats of change to project economics, risk profiles and business dynamics are most unsettling, and create such uncertainty that projects and mobile investments can be moved offshore very quickly.

The BTWG targeting of three broad categories of savings at the expense of the Australian mining sector in order to fund a reduction in corporate taxes across all sectors of the economy have been most unhelpful in this regard.

Of further concern is the fact that the BTWG appears to have little understanding of the industry or of the potential financial, social and economic ramifications if changes are made to interest deductibility, capital allowances and the treatment of capital expenditure, and the R&D tax concession.

The fact that the BTWG has provided only limited details on the possible reform options and has not released any financial or economic modelling or sensitivity analysis seems to confirm that view.

AMEC has also expressed extreme doubt on the robustness and integrity of the empirical and historical data and statistics that the BTWG is apparently using as the basis for its estimated revenue savings.

As detailed in the **attached** submission, **AMEC strongly opposes the proposed initiatives contained in the Discussion Paper** in view of the:

- Current economic cycle and state of the mining and minerals exploration sector,
- Detrimental impact on critically important risk profiles, project economics, working capital and cash flow forecasts, particularly in the early stages of development,
- Increased investment and business uncertainty created,
- Increased sovereign risk and further damage to Australia`s reputation as a safe place in which to invest,
- Lack of research on the long term impact of the proposed changes on existing and new development projects, investor behaviour, the Australian economy and job opportunities, and
- Doubt about the robustness and integrity of the available research data, statistics and classifications underpinning the estimated revenue savings.

**AMEC does not support adoption of the options in the Discussion Paper.**

AMEC also recommends that the BTWG:

1. Undertakes comprehensive research, analysis and modeling, in liaison with AMEC, in order to identify and understand the economic, financial and social implications of further changes to existing tax deductions or allowances currently provided to the Australian mining industry,
2. Release all research data, financial, social and economic modeling and assumptions,
3. Advise the Australian Government to not make any premature decisions in order to reduce the company tax rate by the broadening of the business tax base at the expense of the Australian mining industry,
4. Encourages the Australian Government to make an early announcement that a stable tax regime will apply to the Australian mining industry in the medium term, in order to remove the current high level of uncertainty and increased sovereign risk,
5. Advise the Australian Government to develop a long term tax reform strategy in liaison with the mining industry,
6. Supports the development of a National Exploration Strategy in order to promote investment in greenfields minerals exploration, and

7. Benchmarks the Australian general depreciation regime against the depreciation regimes in competitor economies.

As these are critically important recommendations, AMEC would appreciate another opportunity to meet with the BTWG prior to the release of the Final Report and before any premature decisions are made the Government to amend the current taxation regime.

If you have any queries in respect of this correspondence or submission please do not hesitate to contact me direct or Graham Short.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Simon Bennison', with a long horizontal flourish extending to the right.

**Simon Bennison**  
Chief Executive Officer



Submission to:

The Treasury

Re - Business Tax Working Group Discussion Paper

ASSOCIATION OF MINING AND EXPLORATION COMPANIES

September 2012

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## Introduction

Thank you for the opportunity to provide comments on the Business Tax Working Group Discussion Paper dated 13<sup>th</sup> August 2012.

AMEC is the peak national industry body for mineral exploration and mining companies within Australia. The membership of AMEC comprises over 360 explorers, emerging miners and the companies servicing them.

AMEC's strategic objective is to secure an environment that provides clarity and certainty for mineral exploration and mining in Australia in a commercially, politically, socially and environmentally responsible manner.

A fundamental requirement for the minerals exploration and mining industry is the need for clarity and certainty. This is particularly relevant to public policy settings, including those relating to the taxation regime.

Unfortunately, over the past few years the Australian Government and various State and Territory Governments have continued to analyse, review and amend public policy settings to such an extent that a significant amount of uncertainty has been generated by the constant moving of the policy and taxation 'goal posts'.

This uncertainty has permeated into investment and business decision making processes to such an extent that numerous planned expansions and new projects are being deferred, cancelled or transferred to competitive overseas jurisdictions.

The introduction of the Minerals Resource Rent Tax on iron ore and coal, the carbon tax and reduced fuel tax credit arrangements have significantly contributed to this increased uncertainty, as well as directly affecting working capital, cash flow forecasts, project economics, business risk profiles and investor behaviour.

In addition, the industry has also been faced with:

- increasing operating costs (labour, fuel, transport, power; and a range of levies, royalties and cost recovery processes),
- very tight and competitive global financial markets in accessing equity capital,
- reduced share prices and market capitalisation, and
- reduced productivity and future growth potential.

All of these signs are of concern for the Australian taxpayer and the economy as tax and other revenue streams, jobs, social and economic dividends will be threatened in the short term.

It takes an average of 7 years to convert a discovery into a mining operation. During this period the project economics (including cash flow projections, commodity prices, exchange rates, taxes and royalties) and the project business case are the subject of considerable due diligence and financial scrutiny. The existence of a stable tax regime and detailed analysis provides directors,



financiers and investors with the required level of confidence to proceed with the project for the long term.

Constant changes or threats of change to public policy and taxation settings directly affect project economics and business dynamics and are most unsettling. They also create such uncertainty that projects and mobile investments can be moved offshore very quickly.

The BTWG targeting of three broad categories of savings at the expense of the Australian mining sector in order to fund a reduction in corporate taxes across all sectors of the economy have been most unhelpful in this regard.

Of further concern is the fact that the BTWG appears to have little understanding of the mining industry or of the potential financial, social and economic ramifications if the proposed changes are made to interest deductibility; capital allowances and the treatment of capital expenditure; and the R&D tax incentive.

The fact that limited financial details on the possible reform initiatives and potential savings or detailed modelling / sensitivity analysis has not been released seems to confirm that view.

In the absence of further details in the Discussion Paper, AMEC is concerned about the integrity of the calculations contained therein, and the historical data that underpins any calculations.

In this regard, there is confused generic and aggregated use of terminology used by government reporting agencies and others when referring to 'resources', 'mining', 'oil and gas', 'energy', 'petroleum' and 'exploration'.

These terms and their classification are all used interchangeably by different agencies with the result that some statistics that are published do not reflect the true picture, thereby directly affecting the public policy setting process.

The collection mechanisms, terminology, classification, timing, interpretation and publication of data / statistics needs to be more robust and has recently been raised with various government agencies, including the Executive Director of the Bureau of Resources and Energy Economics.

AMEC therefore considers that extreme care should be taken by the BTWG in attempting to interpret the empirical and historical data that is available on the 'resources' industry.

By way of further explanation, there is a perception that we have been experiencing a 'resources boom' in Australia. However, further analysis into the statistics will reveal that large increases in production / tonnage levels and record profits are only being experienced by a handful of multinational conglomerates. Thousands of other emerging mining and junior exploration companies in the 'resources' sector have not been enjoying the same level of success.

Further critical analysis of the statistics should be undertaken by the Government. It should not just rely on 'headline' statistics such as 'capital investment', 'exploration expenditure', 'investment pipeline', or the extent of the 'resources inventory'. These statistics do not provide the full picture.

In summary, AMEC strongly opposes the options contained in the BTWG Discussion Paper as there has been insufficient analysis of the long term impact of the proposed changes on existing and new development projects, investor behaviour, the Australian economy and job opportunities.

## Recommendations

1. **AMEC does not support adoption of the options in the Discussion Paper.**

AMEC also strongly recommends that the BTWG:

2. **Undertakes comprehensive research, analysis and modeling, in liaison with AMEC, in order to identify and understand the economic, financial and social implications of further changes to existing tax deductions or allowances currently provided to the Australian mining industry,**
3. **Release all research data, financial, social and economic modeling and assumptions,**
4. **Advise the Australian Government to not make any premature decisions in order to reduce the company tax rate by the broadening of the business tax base at the expense of the Australian mining industry,**
5. **Advise the Australian Government to develop a long term tax reform strategy in liaison with the mining industry,**
6. **Encourages the Australian Government to make an early announcement that a stable tax regime will apply to the Australian mining industry in the medium term, in order to remove the current high level of uncertainty and increased sovereign risk,**
7. **Supports the development of a National Exploration Strategy in order to promote investment in greenfields minerals exploration,**
8. **Benchmarks the Australian general depreciation regime against the depreciation regimes in competitor economies.**

## Structure of the Industry and points of difference

The Australian mining and minerals exploration industry is made up of approximately 2,500<sup>1</sup> companies (listed and unlisted); comprising:

- A handful of major conglomerates that dominate market share;
- A relatively small number of mid-tier and emerging miners in the middle; and
- Junior exploration companies that represent the vast majority of the industry.

There are significant 'points of difference' between the characteristics and needs of small and emerging mining companies compared to large mature multi-national conglomerates.

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<sup>1</sup> Policy Transition Group July 2010

There should not be a *“one size fits all approach”* given the significant differences in business models and financing strategies between the large and smaller miners.

These differences include:

1. Generally higher risk profiles reducing the availability and increasing the cost of both equity and debt funding,
2. Reduced access to adequate levels of much needed working capital / cash flow in which to re-invest into the project, particularly in the early stages,
3. Lower economies of scale and consequently higher unit-cost of production,
4. Often single-project status which prevents the transfer of unutilised losses between projects thus delaying cash flows, reducing profitability and introducing the risk that some losses will never be recovered,
5. Inability to individually fund infrastructure and inability to access proprietary transport infrastructure in which to complete the supply chain to the market, and
6. Inability to attract and retain quality key professional personnel.

Unfortunately, these ‘Points of difference’ have not been acknowledged or addressed by most Australian Governments, who appear to continue in the mistaken belief that all mining related companies are multinational conglomerates that generate huge profits.

**There is no recognition given to the considerable investment and high long term risk associated with mineral exploration; difficulty in raising capital; the long lead time from discovery (if indeed a discovery is made) to production; or of the immense working capital / cash flow and financing demands on each project (particularly in the early stages of development).**

## **State of the Industry**

In considering any changes to the taxation regime it is important to consider the economic conditions in which Australian mineral exploration and junior mining companies operate.

### **Mobile Capital**

Australia does not have a monopoly on the earth’s mineral resources.

While it has enjoyed a prestigious position as one of the world’s major producers and investment destinations, this position is fast being eroded by the entrance of new mineral producing provinces from emerging mineral producing jurisdictions, such as Africa.

Capital is now more mobile than it has ever been and investors are quick to shift their focus if they sense a better return in, or a preferred investor appetite for another jurisdiction.

However, Australia is significantly under explored and for that reason still holds huge mineral potential.

Therefore Australia must create conditions that continue to attract exploration and development investment, and not consider contradictory public policy strategies such as those being considered in the Discussion Paper.

The vast proportion of exploration companies source their funding capital through the equity markets through initial public offerings (IPO) and secondary capital raisings (e.g. rights issues / placements etc).

IPO statistics extracted from the Intierra database reveal that over 50% of the funds raised on the ASX for exploration are for overseas projects, in jurisdictions such as Africa, Canada and Latin America.

### **Tight Capital Markets**

Minerals exploration companies and mid tier producers are finding it increasingly difficult to raise capital.

In 2011, of the 78 mining companies that listed (including explorers and excluding oil, gas and service companies) only 18 posted positive gains in their share price. For the balance, the average loss was 17%, while the median was 23%.

Meanwhile, the ASX small resources index for companies with a capitalisation below \$300 million has fallen 30% since January last year.

Regular face to face confidential discussions with AMEC members confirms that many companies under the \$100m market capitalization level have also experienced share prices falling by more than 50% over the past 18 months.

While much of the problems for the smaller end of the industry are caused by factors outside the control of Australian and State governments, AMEC believes governments could be doing more to promote the industry and provide a buffer from global events.

### **Greenfields Minerals Exploration is Declining**

Greenfields minerals exploration sector is potentially in serious decline.

This is of extreme concern as it underpins a successful mining industry.

As a proportion of the total metres drilled, the greenfields exploration share throughout Australia has fallen from around 45% to just over 30% since 2003, while brownfields has consequently risen from 55% to nearly 70%.

This reduction in the share of greenfields drilling in new frontier or under explored areas is due to the:

- higher risk / reward equation,
- inability of junior explorers to finance and undertake riskier drilling in the current business environment,
- uncertainty on whether a viable discovery will be made in unknown provinces, and
- the current public policy settings.

The corresponding increase in the share of brownfields exploration drilling around existing sites, particularly iron ore mines, is caused by the imperative to trace the location of the ore body for immediate or early mining, and to take advantage of the then higher commodity prices and product demand from China.

This decline in greenfields exploration signals a threat to the long term growth of the Australian mining industry as the potential to discover the next operational mine decreases.

In addition, the Centre for Exploration Targeting at the University of WA recently released a paper (**attached**) authored by well known and respected academics and industry commentators Professor Pietro Guj and Richard Schodde that questions the sustainability of Australia's non-bulk commodity mining industry in light of reduced discovery rates and a reducing share of global exploration expenditure.

The comprehensive and well researched paper highlighted numerous trends that raise the serious question – *'where are Australia's mines of tomorrow coming from?'*

The Paper contains serious findings, and makes a number of significant observations in the Executive Summary, including:

- *'Australia's share of global exploration for non-bulk commodities has virtually halved from its peak of 21% in 2002 and it now stands at a mere 12% of the total, while that of Canada, for instance, has increased from 14% to 18% over the same period.'*
- *'Given that bulk minerals now make up half of the exploration dollars spent in Australia, a sustained contraction in this sector will have a material impact on employment and service providers in the broader economy.'*
- *'As the mantra goes "if you don't drill, you won't discover". A reduced rate of discovery may result in the national mineral inventory being gradually depleted and the Australian mining industry becoming unsustainable in the long run with potentially serious economic consequences.'*
- *'Although the number of small cap IPOs on the Australian stock exchange increased by 10% in 2011 to 92 listings (of which 78 were from junior mining companies), the amount raised was down by 17% on the previous year. The average amount raised by small caps was at its lowest level for five years at \$6.8 million. Sixty nine per cent of all 2011 listings produced average losses of 13% by the year end, which does not bode well for future equity floats. Given that juniors now account for over half of all exploration spend in Australia, difficulties in raising finance will directly translate into reduced exploration activity particularly greenfield exploration.'*
- *'The trend for Australian based companies to devote an increasing proportion of their budget to explore abroad has continued with about half of their funds now being diverted from domestic exploration to jurisdictions such as Africa, Canada and Latin America.'*
- *'Trends in decreasing efficiency and lower discovery rates continued. In spite of the "mining boom" in Australia, there has been, over the last decade, a shift in exploration expenditure from greenfields to brownfields (particularly for bulk commodities) and a gradual decline in the metres of drilling directed to greenfields projects.'*
- *'The ABS figures showing Australia's real exploration spend increasing fourfold over this period mask this critical decline in greenfield exploration, the kind of exploration needed to find large new mines. The fact that a fourfold increase in exploration expenditure in Australia over the last 10 years only resulted in a twofold increase in metres drilled is largely explained by significant real escalation in the cost of mineral exploration in general and in particular of the per-meter drilled cost.'*

- *'The number of discoveries per dollar invested has gradually fallen for all deposit sizes with a virtual absence of recent giant discoveries due to the maturing of some of our exploration terranes, which has forced explorers to drill for concealed and progressively deeper targets.'*
- *'The gradual shift of funding from greenfield to brownfield exploration, while understandable in terms of short-term profitability, is worrying as in the long-run the decrease in sizeable greenfield discoveries will make it hard to counteract the depletion of the national resource inventory thus imperilling the sustainability of the Australian mining industry.'*
- *'It is estimated that in the absence of new discoveries and mine extensions, based on current reserve and resources, about half of Australia's non-bulk commodities mines would be exhausted in between 7 and 18 years.'*
- *'The challenge for industry is the fact that, on average, it takes 7 years to convert a discovery into an operating mine. Consequently, to be sustainable in the longer term, the mining industry needs to continuously build up a strong pipeline of projects at or close to the development stage. This, in turn, is only possible on the basis of an active and successful minerals exploration sector.'*
- *'On balance it is possible that the Australian mineral exploration investment for non-bulk commodities may be peaking and that the sector may now be entering a period of contraction. This may not be appreciated by the Australian public at large or by some of the politicians because it is masked by a perception that mining is in a phase of significant boom. While of course, this is true with regard to the frantic rate of development and construction of a long pipeline of committed multi-billion dollars resources projects, it is far from being the case for the mineral exploration industry which is experiencing mounting technical and financial pressures.'*
- *'Maintaining, ideally increasing, the mineral resources inventory should not be an exclusive concern of industry but also a key objective of government because of the broad economic consequences that would arise if the Australian mining industry were to become unsustainable besides from the direct consequent reduction in royalty and tax revenue, and the many other social and economic dividends.'*<sup>2</sup>

AMEC further notes the comment made by the BTWG in the Discussion Paper<sup>3</sup> that ***'the reduction or removal of exploration concessions would be expected to increase marginal effective tax rates for explorers, reducing the scale of exploration in Australia and encouraging some investors to transfer activities overseas'***.

AMEC endorses such an observation that investor behavior will be directly affected by any reduction or removal of exploration concessions.

It will also directly affect the capacity of junior minerals exploration companies to raise project finance, and diminish their attractiveness as a target for a subsequent merger or acquisition by a larger company.

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<sup>2</sup> 'Where are Australia's Mines of Tomorrow', Centre for Exploration Targeting, The University of Western Australia, September 2012, pages 1-2.

<sup>3</sup> BTWG Discussion Paper, Paragraph 138, page 31

Any negative changes to current public policy surrounding minerals exploration, such as those being proposed in the BTWG Discussion Paper (Exploration and Prospecting and the R&D Tax Incentive) will therefore be **contradictory to the various observations and conclusions drawn by the University of Western Australia Report.**

## Commentary on the Discussion Paper

### Reducing the corporate tax rate

AMEC has difficulty in accepting the underlying proposition of the BTWG - that any reduction in the corporate tax rate should be offset solely by other changes to the corporate tax system.

The weight of public finance research, cited in the '*Australia's Future Tax System*' review and cited by former Treasury Secretary Dr Ken Henry at the 2011 Tax Forum, is that reductions in corporate tax ultimately flow through to increase real wages:

“... the consensus of public finance theorists is that in Australia if the company income tax were to be cut, the principal beneficiaries will be workers. They would be the principal beneficiaries.”<sup>4</sup>

The mechanism by which this occurs is increased investment, including foreign capital inflows, which contribute to increased capital stock in the economy. Additional capital investment driven by lower corporate tax leads to higher productivity and ultimately to higher real wages.

The Discussion Paper also noted that:

“The quantity of investment in the economy should increase to the extent that EMTRs are reduced, thereby resulting in an increased level of capital in the economy. Greater quantities of capital will enhance the marginal productivity of labour, resulting in an increase in incomes, productivity and economic growth.”<sup>5</sup>

AMEC considers that the mechanism by which lower corporate tax lead to higher real wages was not generally understood by several key participants in the 2011 Tax Forum and welcomes the contribution made by BTWG in Section 3 of the Discussion Paper in '*The Case for a Lower Company Tax Rate.*'

It is regrettable that this lack of understanding has become the basis for the proposition that any reduction in the corporate tax rate must necessarily be offset by other measures solely related to business taxation.

### Australia's declining relative tax competitiveness

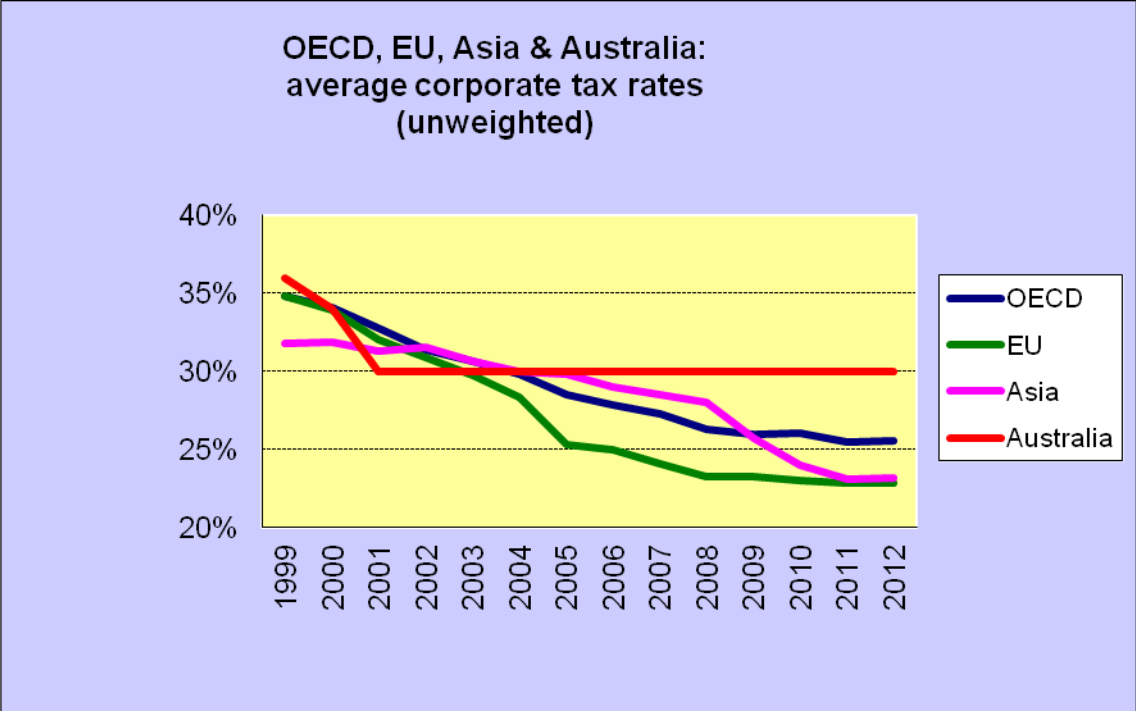
Section 4 of the Discussion Paper on '*International Trends*' acknowledges the fact that corporate tax rates have been falling internationally. While the analysis was based on OECD data it is useful to note that many non-OECD countries, particularly in the Asia Pacific, have been reducing their statutory corporate tax rates more aggressively than the OECD. The following chart suggests that this trend towards lower corporate tax rates has hardly abated in the wake of the global financial crisis and even a reduction in the Australian corporate tax rate to 25 per cent would only serve to restore some competitiveness.

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<sup>4</sup> Henry K, '*Tax Forum*' (2011)

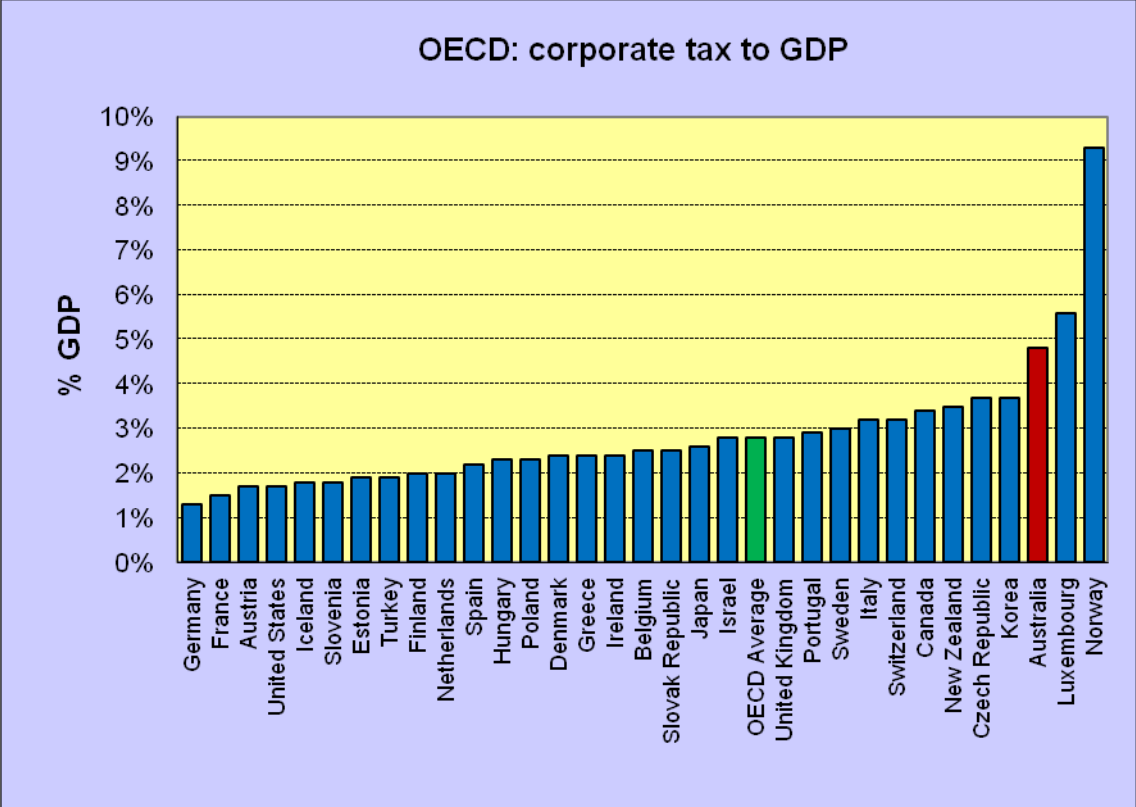
[http://www.futuretax.gov.au/content/Content.aspx?doc=TaxForum/transcripts/session\\_1.htm](http://www.futuretax.gov.au/content/Content.aspx?doc=TaxForum/transcripts/session_1.htm)

<sup>5</sup> The Treasury, Business Tax Working Group, '*Discussion Paper*', para 52, (2012)



Source: KPMG Corporate Tax Surveys 2008 & 2012

In addition to having a high statutory corporate tax rate, Australia also has one of the higher corporate tax burdens in terms of corporate tax as a percentage of GDP. This relatively high corporate tax burden is largely due to a combination of the relatively high statutory corporate tax rate and the base broadening measures introduced by successive governments, particularly those associated with the *New Business Tax System* in 2001.



Source: OECD Revenue Statistics 1965-2009



**Note:** Average does not include Chile or Mexico, as disaggregated data for corporate and individual income tax revenue is not available

AMEC contends that a reduction in the corporate tax rate would be beneficial for the Australian economy in its own right and rejects the proposition that it should necessarily be funded exclusively by other changes to the corporate tax system. The Government should consider the potential growth dividends associated with a reduction in the corporate tax rate and consider the issue more broadly, including the composition of the Australian tax mix.

However, given that the BTWG is required to identify offsetting revenue increases to offset a reduction in the corporate tax rate, AMEC submits that it is unreasonable to impose an increased revenue burden on a particular sector or sectors of the economy in order to fund a corporate tax reduction for all sectors of the economy.

### **Modelling**

AMEC notes that the Discussion Paper options have been presented on a strict accounting basis.

The absence of econometric modelling of the second round impact of any of the possible changes to the corporate tax system is, in AMEC's view, a shortcoming of the Discussion Paper.

AMEC considers that Treasury should have the capacity to model the impact on the economy, revenue and jobs and supports further resources from Treasury being committed to assist the BTWG in estimating the dynamic impacts of some of the measures being canvassed.

### **Interest deductibility and thin capitalisation**

#### Options A1 to A5:

Australia's existing thin capitalisation regime appears at first to be relatively liberal, a proposition advanced in the Discussion Paper<sup>6</sup> with a safe harbour debt-to-equity ratio of 3:1.

However a key difference is that the Australian thin capitalisation regime applies to debt from all sources, while other thin capitalisation regimes typically apply only to related party debt.

It is open to question whether Australia has a more concessionary thin capitalisation regime, given the capacity of taxpayers in other jurisdictions to expand or increase their debt beyond the prescribed debt-to-equity ratios provided that it is third-party debt.

While AMEC appreciates the difficulty in modelling the options for changing to the thin capitalisation rules, the absence of any economic or revenue estimates in the Discussion Paper makes it difficult to estimate the extent to which new restrictions on interest deductibility would contribute to additional revenue.

AMEC considers that if there are any changes to the thin capitalisation rules, they should be applied equally to all sectors of the economy. Further, if the safe harbour debt-to-equity ratio is to be reduced, the rules should also be aligned with other jurisdictions by applying the thin capitalization rules solely to related-party debt.

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<sup>6</sup> The Treasury, Business Tax Working Group, *'Discussion Paper'*, para 98 (2012)

AMEC suggests some caution in changing the thin capitalisation rules, in particular any changes should recognise that some taxpayers may have entered into long-term debt arrangements that would entail significant 'break-fees' if they had to be restructured to meet a lower debt-to-equity ratio. A change in the thin capitalization rules would clearly have a detrimental impact on the economics of mining projects that are currently underway.

AMEC therefore proposes that any changes should be prospective and have transitional rules that include the grandfathering of any long-term debt arrangements or as a minimum, adequate time for companies to seek to re-adjust their gearing levels.

### **Depreciating assets and capital expenditure**

AMEC will comment on the general issues with respect to depreciation regimes and those specific to exploration and prospecting. While the timing of tax deductions for exploration companies with carry forward tax losses and no significant income levels does not have an immediate impact on their tax liability position, it can have a significant impact on both companies seeking to develop projects and producer companies in terms of timing of tax payments and their capacity to meet project finance funding and working capital requirements.

#### Option B1: Reducing the diminishing value rate for depreciation from 200% to 150%.

AMEC notes the Discussion Paper commentary with respect to the diminishing value rate for depreciation, specifically that the 200 per cent rate was recently introduced in 2006-07 for the stated purpose of better aligning depreciation deductions with the actual rate at which assets decline in value.<sup>7</sup>

Furthermore, the Discussion Paper notes that a diminishing value rate of between 150 percent and 200 per cent is supported by a number of (albeit somewhat dated) academic studies.<sup>8</sup>

It should also be noted that many jurisdictions have tax regimes which allow for shorter effective asset lives than the Australian uniform capital allowance regime.

Australia's existing 200 per cent diminishing value rate is not unusual internationally in jurisdictions which permit the diminishing balance treatment of depreciating assets. Other jurisdictions which allow for the diminishing balance treatment of depreciation, such as the United States and Japan, have similar diminishing value rates. In the United States, the diminishing value rate for most assets under the Modified Accelerated Cost Recovery System is generally 200 percent (exceptions include a reduced 150 per cent rate for farm property and dollar caps on motor vehicles used for business).<sup>9</sup> Japan also has a 200 per cent diminishing value rate, reduced in April 2012 from a 250 per cent diminishing value rate introduced as an economic stimulus measure.<sup>10</sup>

In some respects a reduction in the diminishing value rate for depreciation would share the burden across all sectors of the Australian economy and therefore might be considered to be a fairer outcome than changes which impact on one sector for the benefit of all other sectors of the economy. However, the impact of Option B1 would inevitably fall most heavily on the more capital intensive sectors of the economy and run counter to the policy objective of increasing productivity by increasing capital intensity within the economy.

<sup>7</sup> The Treasury, Business Tax Working Group, *'Discussion Paper'*, paras 120, 121 (2012)

<sup>8</sup> *Ibid*, para 122

<sup>9</sup> [US] Department of the Treasury, Internal Revenue Service, *'How To Depreciate Property'*, Publication 946, Washington DC (2012)

<sup>10</sup> KPMG Tax Corporation, *'Taxation in Japan'*, Tokyo (2012), pp 32-33

AMEC recommends that more resources should be committed to assessing the appropriateness of the existing and proposed diminishing value rate and to benchmarking the Australian general depreciation regime against the depreciation regimes in competitor economies.

This work should be completed to better inform the BTWG prior to making recommendations on this issue.

### **Exploration and Prospecting**

As stated earlier, the minerals exploration sector in Australia is currently experiencing a severe downturn with low commodity prices, high costs of exploration and a depressed capital market restricting the capacity for exploration and mining companies to raise capital to fund exploration programs.

Against this background, the removal of an immediate deduction for exploration expenditure, to be replaced by a five year write-off period, would be a major setback for the mineral exploration sector in Australia.

The nature of exploration expenditure is that it is a high risk investment that on rare occasions may lead to the ultimate development of a mining project and production of mining revenue.

The immediate deductibility of exploration expenditure is a critical feature for the mining industry, particularly for any emerging producers seeking to raise capital and project finance to fund the development of a mining project.

Where a company's prior and current year exploration expenditure is not immediately deductible it adversely impacts on both the net present value and internal rate of return of a project, making it more difficult for projects to be financed as it will accelerate the timing of income tax payments at a critical stage in the lifecycle of a mine. It is at this time there are greatest demands for cash flow to meet interest and principal repayments, and to fund the working capital requirements of a new project.

Similarly, for existing producers, the removal of immediate deductions for exploration will reduce the incentive and available cash flow for further exploration expenditure to enable them to continue to increase their mine life and to make new discoveries.

The BTWG report identifies different categories of exploration expenditure, including:

- Depreciating assets first used for exploration (Option B7);
- Acquisition costs of exploration tenements first used for exploration (Option B8); and
- Non-depreciating exploration expenditure (Option B9).

#### Option B7: Remove or reduce "first use" exploration deduction

As a general rule in the mining sector, expenditure on depreciating assets first used for exploration does not represent a significant proportion of a company's exploration expenditure.

This is primarily due to the fact that most exploration and mining companies engage drilling contractors to provide exploration services, rather than acquire depreciating assets in their own right. In this regard AMEC has assumed that the costings provided by Treasury in Paragraph 140 does not include expenditure on acquiring "mining information" (which is a depreciating asset) through a company undertaking exploration activities.

As outlined further below, AMEC is strongly of the view that general exploration expenditure (e.g. payments to drilling companies and service providers) should remain immediately deductible as they represent sunk costs and should be distinguished from the acquisition of depreciating assets or exploration tenements.

#### Option B8: First use exploration deduction – intangibles

In the mining sector the acquisition of an interest in exploration tenements is typically undertaken as a deferred farm out arrangement.

As outlined in Miscellaneous Taxation Ruling MT 2012/2, a key requirement to ensure taxation neutrality for both a farmor and farmee is for both parties to be able to claim an immediate deduction for the cost of an interest in a tenement when it is first used for exploration activities.

If there was to be a change in policy for tax deductibility of tenement acquisition costs, the taxation of farm out arrangements will require specific consideration and potentially legislative amendments, to ensure the taxation consequences of entering into these types of arrangements are not adversely impacted.

This can be distinguished with the acquisition of tenements arising from merger and acquisition activity resulting in the head company of a consolidated group being deemed to acquire the underlying mining rights of the target company.

#### Option B9: Deduction for non-depreciating exploration expenditure

As noted above, it is not clear from the BTWG Discussion Paper whether expenditure on drilling services, assays etc are included in Option B7 (on the basis that the output of this expenditure is “mining information” which is a depreciating asset), or whether it is included under Option B9.

In this regard, AMEC’s understanding is that the annual level of exploration expenditure of this type in Australia would far exceed the estimates included under Option B9.

#### Option B10: Removal of immediate deduction for exploration expenditure by large companies

AMEC is not in favour of introducing arbitrary thresholds as a method of determining tax outcomes due to the distortionary effects of these mechanisms, and the uncertainty it creates, particularly having regard to the variability of mining companies’ revenue through changes in production levels and commodity prices. AMEC also notes in the current environment of increasing costs associated with exploration, this change in policy will act as a further disincentive for mid-cap to large producers to undertake exploration activities in Australia Option B11: Exclude feasibility studies from exploration expenditures

AMEC is of the view that feasibility study costs which are expended in establishing whether a mining project is financially viable should retain their tax treatment of being immediately deductible to reflect the overall risks associated with the development of mining projects.

### **R&D tax incentive issues**

AMEC is extremely concerned, and opposed to the recommendation to amend or remove the R&D Tax Incentives scheme as a means to fund a cut in the corporate tax rate.

This concern is based on the adverse impact that it will have on small emerging mining and minerals exploration companies. A reduction in the incentive to invest in R&D will put additional pressure on these companies to reduce investment and drive business offshore.

AMEC is also concerned that any amendment to the R&D tax incentive scheme will directly reduce working capital that would otherwise be available for re-investment into further R&D activities, and the growth potential of the industry.

### Options C1 – C4

In its Discussion Paper the BTWG proposes changes to the recently enacted R&D Tax Incentive scheme.

- Option C1: Abolish the 40 per cent non-refundable tax offset
- Option C2: Impose a turnover threshold above which the 40 per cent non-refundable tax offset could not be claimed
- Option C3: Impose a cap on the amount that can be claimed annually under the 40 per cent non-refundable tax offset
- Option C4: Cut the non-refundable offset to 37.5 per cent

### R&D Expenditure in the Australian Mining Industry

The mining industry remained the largest contributor to total Business Expenditure on R&D (BERD) in 2010-11, after the manufacturing sector, with R&D expenditure reaching \$3.821B, an increase by 3% from the previous year. Small and medium sized companies contributed to around 30% of the total R&D expenditure.

A large proportion of AMEC members have claimed the R&D tax concession – many since the inception of the concession in the late 1980's. The program is much valued by small and emerging companies, as it offers incentives for them to continue to invest in R&D despite the high levels of working capital required to operate their businesses.

However, the program has reduced per dollar savings significantly over time. The tax concession rate was initially 150% and the corporate tax rate was previously as high as 46 - 49%. As a result, over the past twenty years, the benefit per dollar has reduced from 24.5% to the current 10% and 15% rates (depending on the turnover of the company) brought in by the recent changes in the R&D Tax Incentive legislation. This shows that the level of government assistance towards business expenditure on R&D has already reduced significantly.

### The R&D incentive provides flow on benefits to AMEC members and the Australian economy

Abolishing the dual 125% and 175% Premium rates - and replacing this with a flat 10% and 15% benefit - has simplified the law in the context of the calculation of the 175% premium benefit. However, viewed in the context of the after tax benefit over the past twenty years (originally 24.5% ) the 10% and 15% benefit is actually quite low.

Notwithstanding this, even a low rate of 10% and 15% is critical to AMEC members because it provides the following flow on benefits:

- re-investment of the R&D benefit by employing additional R&D staff;
- investment in new technology, research and equipment;
- identify, develop and implement innovative solutions for products, processes and customer services through application of technical and quality expertise;

- acquire and develop new knowledge relating to mineral exploration, processing methods, product development and scientific knowledge management strategies;
- adds rigour to innovation and strategic planning program;
- drives a philosophy of innovation across businesses; and
- commercialise innovative products, remain competitive, and maintain market leading status.

### Economic Issues

Over the last decade, R&D expenditure in Australia has significantly increased. This may be due to a variety of factors including:

- A previously buoyant economy during which companies expended more funds, including on R&D; and
- The availability of 175% premium deductions since 2001.

However, it is clear that such economic conditions and spending habits, particularly in the mining and exploration sectors, may have already peaked. Indeed, beyond 2010, there is likely to be a permanent impact of the global financial crisis as:

- Projects are cancelled or deferred;
- Offshore investment into Australia is reduced due to the constricted economic conditions overseas; and
- Potentially reduced access to finance for Australian companies, particularly start up companies without a proven track record of commercialisation.

In addition to the global economic issues, the changes in the R&D tax legislation and BTWG recommendation to abolish or reduce the tax savings have put additional pressure on small and emerging mining companies to invest in R&D.

### Cutler review, recent R&D legislative change and its impact on AMEC's member companies

Importantly, the recent changes to the R&D incentive regime were the direct result of almost 4 years of R&D policy research and investigation (Cutler Review), industry and parliamentary debate, Senate Committee scrutiny and legislative drafting. This resulted in new R&D legislation effective from 1 July 2011. As such, Australian industry has had just one year to digest the changes and it is a non-sense to further modify and reduce the new R&D incentive since the effectiveness of the new incentive is yet to be assessed.

### The new R&D Incentive already impacts AMEC members

It is likely that the quantum of eligible R&D activities will be reduced as a consequence of the recent changes in the legislation, in particular via restrictions in:

the definition of "core R&D activities";

the more restrictive dominant purpose test for supporting activities; and

- the feedstock provision.

As a consequence, AMEC considers that there has already been a reduction in the level of Government R&D funding to many AMEC members, particularly those with turnover greater than \$20m.

### Conclusion

As mentioned, industry has worked extensively and collaboratively with the Australian Government for 4 years regarding the very recent changes to the definition and application of the R&D Incentive scheme. AMEC is therefore concerned that the proposed BTWG R&D options undermine this extensive effort and government commitment to supporting R&D in Australia. It is premature to recommend any changes whatsoever to the new R&D incentive. For this reason none of the BTWG R&D options is acceptable to AMEC.



# WHERE ARE AUSTRALIA'S MINES OF TOMORROW?

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Centre for Exploration Targeting (CET), The University of Western Australia (UWA)  
September 2012

## *Executive Summary*

*Although world mineral exploration expenditure for non-ferrous commodities has been recovering strongly from its low in 2009 and is back on the rising trend which commenced in 2002, Australia has continued to lose ground relative to other global and competitive exploration destinations. Australia's share of global exploration for non-bulk commodities has virtually halved from its peak of 21% in 2002 and it now stands at a mere 12% of the total, while that of Canada, for instance, has increased from 14% to 18% over the same period.*

*Recent Australian Bureau of Statistics figures indicate that Australian exploration expenditure fell during the March 2012 quarter in all states and for all commodities, particularly for iron ore and coal. While the March quarter is generally a period of low expenditure due to climatic reasons, the seasonalised figures still portray a pattern of sluggish investment in exploration. Falls were greater in Queensland and Western Australia, which is probably attributable to the impending introduction of the MRRT and the recent softening of iron ore and coal prices. Given that bulk minerals now make up half of the exploration dollars spent in Australia, a sustained contraction in this sector will have a material impact on employment and service providers in the broader economy. While original exploration expenditure rebounded in the June quarter, in seasonally adjusted terms the declining trend continued with an overall fall of 4.9% largely attributable to Queensland (12.6%) and to a lesser degree Western Australia (1.6%).*

*Of equal concern is the significant seasonalised fall in the amount of drilling carried out in both quarters. While the June 2012 quarter ABS release indicates a small recovery, the March quarter figures indicate that falls were particularly heavy for drilling of "new deposits". As the mantra goes "if you don't drill, you won't discover". A reduced rate of discovery may result in the national mineral inventory being gradually depleted and the Australian mining industry becoming unsustainable in the long run with potentially serious economic consequences.*

*Although the number of small cap IPOs on the Australian stock exchange increased by 10% in 2011 to 92 listings (of which 78 were from junior mining companies), the amount raised was down by 17% on the previous year. The average amount raised by small caps was at its lowest level for five years at \$6.8 million. Sixty nine per cent of all 2011 listings produced average losses of 13% by the year end, which does not bode well for future equity floats. Given that juniors now account for over half of all exploration spend in Australia, difficulties in raising finance will directly translate into reduced exploration activity particularly greenfield exploration.*

*In addition the trend for Australian based companies to devote an increasing proportion of their budget to explore abroad has continued with about half of their funds now being diverted from domestic exploration to jurisdictions such as Africa, Canada and Latin America.*

*Trends in decreasing efficiency and lower discovery rates continued. In spite of the "mining boom" in Australia, there has been, over the last decade, a shift in exploration expenditure from greenfields to*





*brownfields (particularly for bulk commodities) and a gradual decline in the metres of drilling directed to greenfields projects. The ABS figures showing Australia's real exploration spend increasing fourfold over this period mask this critical decline in greenfield exploration, the kind of exploration needed to find large new mines. The fact that a fourfold increase in exploration expenditure in Australia over the last 10 years only resulted in a twofold increase in metres drilled is largely explained by significant real escalation in the cost of mineral exploration in general and in particular of the per-meter drilled cost. The number of discoveries per dollar invested has gradually fallen for all deposit sizes with a virtual absence of recent giant discoveries due to the maturing of some of our exploration terranes, which has forced explorers to drill for concealed and progressively deeper targets.*

*The gradual shift of funding from greenfield to brownfield exploration, while understandable in terms of short-term profitability, is worrying as in the long-run the decrease in sizeable greenfield discoveries will make it hard to counteract the depletion of the national resource inventory thus imperilling the sustainability of the Australian mining industry. It is estimated that in the absence of new discoveries and mine extensions, based on current reserve and resources, about half of Australia's non-bulk commodities mines would be exhausted in between 7 and 18 years.*

*The challenge for industry is the fact that, on average, it takes 7 years to convert a discovery into an operating mine. Consequently, to be sustainable in the longer term, the mining industry needs to continuously build up a strong pipeline of projects at or close to the development stage. This, in turn, is only possible on the basis of an active and successful minerals exploration sector.*

*On balance it is possible that the Australian mineral exploration investment for non-bulk commodities may be peaking and that the sector may now be entering a period of contraction. This may not be appreciated by the Australian public at large or by some of the politicians because it is masked by a perception that mining is in a phase of significant boom. While of course, this is true with regard to the frantic rate of development and construction of a long pipeline of committed multi-billion dollars resources projects, it is far from being the case for the mineral exploration industry which is experiencing mounting technical and financial pressures.*

*Maintaining, ideally increasing, the mineral resources inventory should not be an exclusive concern of industry but also a key objective of government because of the broad economic consequences that would arise if the Australian mining industry were to become unsustainable besides from the direct consequent reduction in royalty and tax revenue, and the many other social and economic dividends.*

## **Introduction**

The paper primarily reviews the latest available mineral exploration statistical information provided by the Metals Economics Group (MEG), by MinEx Consulting and the Australian Bureau of Statistics (ABS) (2012). It also reviews the survey of mining companies' perceptions released by the Fraser Institute (McMahon and Cervantes, 2012), which provides a ranking of various countries based on their attractiveness to mineral exploration and development investment based on a range of criteria. The data in these recent reports are interpreted to provide a snapshot of the current state of play for the Australian mineral exploration sector and to highlight emerging trends both internationally and domestically.



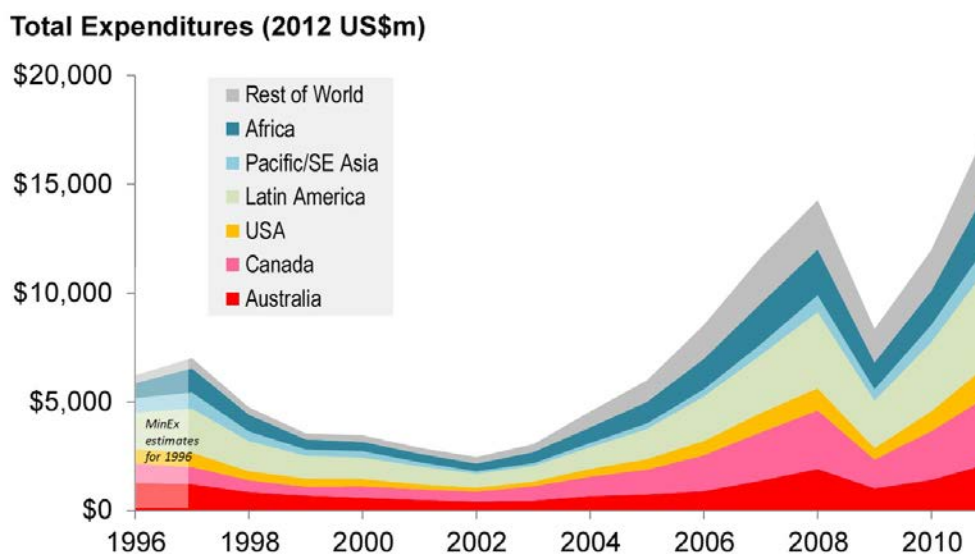
## World exploration expenditure

World exploration expenditure for commodities other than bulk minerals (i.e. iron ore, coal, bauxite) and uranium, totalled US\$17.6 billion in the year ending in December 2011<sup>1</sup>. Figure 1 displays how total exploration expenditure in constant 2012 US\$ continued its recovery path from the trough of 2009 and is now back on the rising trend which commenced back in 2002. While, in absolute terms, more money is now being spent on exploration in Australia than the previous peak back in 2007, our relative share of the global expenditures has actually gone backwards. As shown in Figure 2, Australia's share global (non-bulk) exploration expenditure has steadily drifted down from a peak of around 21% in 1996 to around 12% in 2011. By contrast Canadian exploration expenditure grew over the same period from 14% to 18%. If Australia had kept its market share, then current expenditures in Australia would now be 75% higher.

As will be discussed later in the paper, due to cost inflation, the recent rise in expenditures may not be a good indicator of the industry's overall level of activity. This is better measured in terms of the amount of drilling done and number of discoveries made.

**Figure 1 - World exploration expenditures by Region: 1996-2011 (2012 US\$ million)**

(Source: © Metals Economics Group)



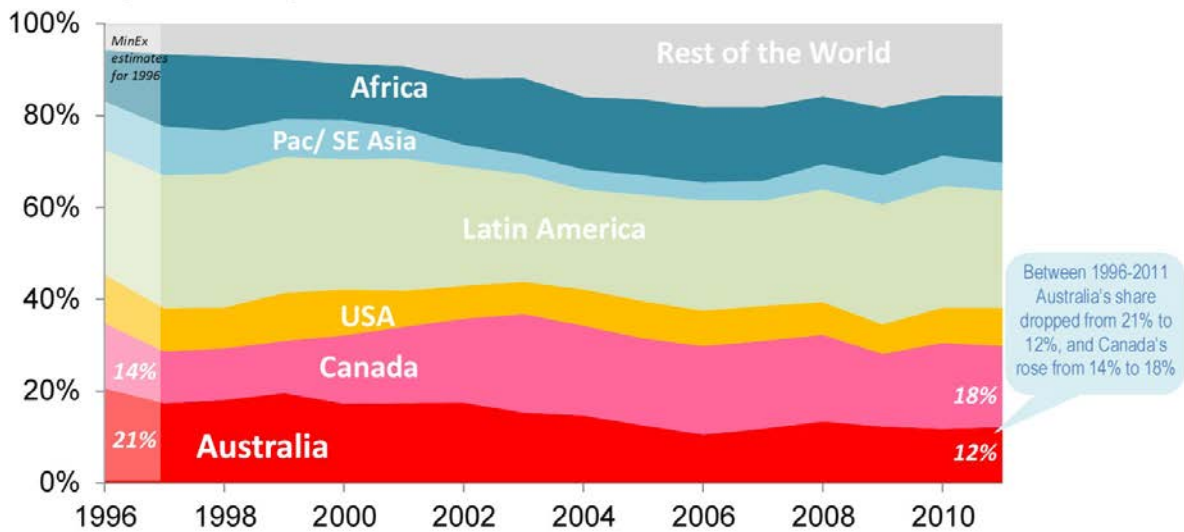
**Figure 2 - World exploration expenditures 1996-2011: Percentage of total spent by region**

(Source: © Metals Economics Group)

<sup>1</sup> Although not covered in the MEG annual surveys, the authors estimate that global expenditures on bulk mineral exploration was ~US\$2 billion in 2011



### Percentage of Total Spend



## Trends in the commodity breakup of Australian exploration expenditure

Figure 3 provides a breakup of Australian exploration expenditure on all commodities including bulk commodities and uranium while Figure 4 provides the same breakup as a percentage of total expenditure.

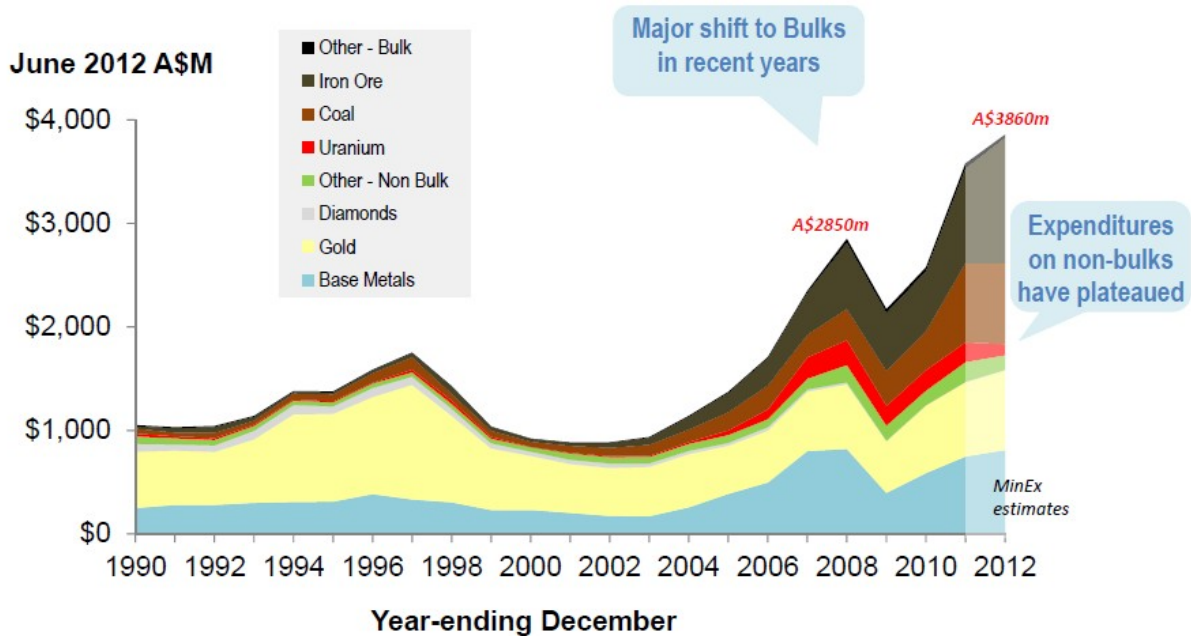
Both figures clearly display how expenditure on iron ore and coal has rapidly increased over recent years, growing from about 9% in 2000 to an estimated 52% of total Australian exploration expenditure in the current year. By comparison exploration for all other non-bulk commodities has remained relatively flat in the last few years. So, while in a general sense, employment has been strong and the service providers<sup>2</sup> been kept very active, their future is now largely driven by the health of the bulk mineral sector.

The recently released report of the Australian Bureau of Statistics for the March 2012 quarter, however, indicates that "original" (i.e. non-seasonalised) exploration expenditure fell in every state and for every commodity relative to the previous quarter by 15.1% (or -\$156.3 million) to \$876.1 million. The largest fall was in Queensland (down 22.4% or -\$57.5 million), followed by Western Australia (down 7.9% or -\$41.8 million). This may reflect the fact that, on a commodity basis, falls were particularly heavy for iron ore and coal. This downward trend may be in part a reaction to the then impending introduction of the mineral resource rent tax (MRRT) on these commodities, reinforced by softening iron ore and coal prices. At the time of writing (August 2012), the CFR price for 62% Fe fines had tipped below US\$90 per tonne with predominantly sluggish medium-term forecasts. This will have a direct impact on the level of exploration activity going forward.

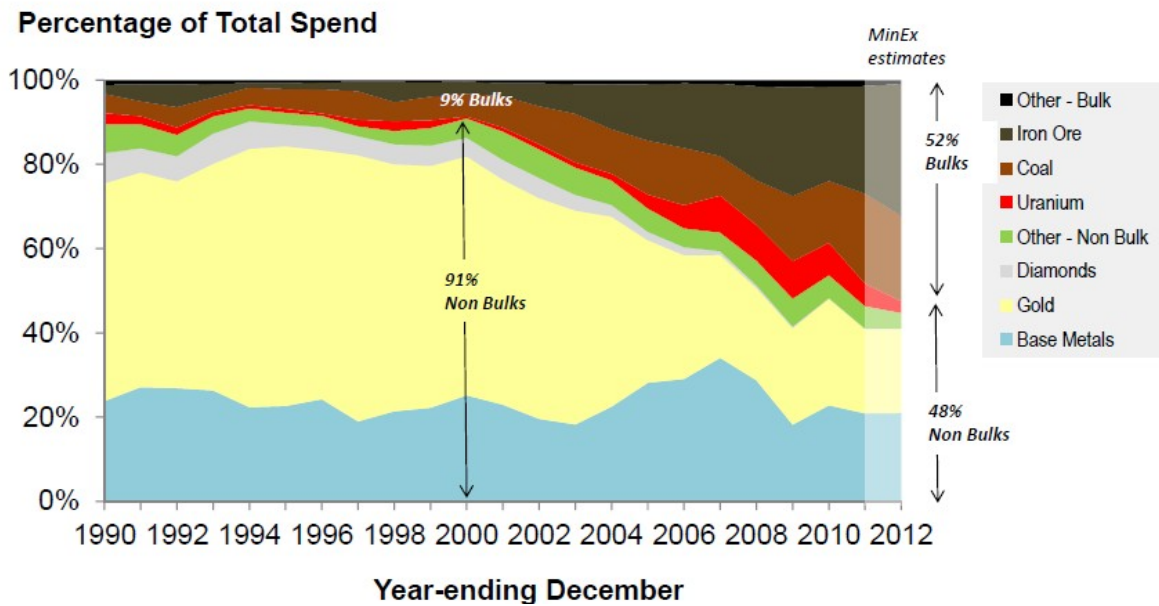
### Figure 3 - Exploration expenditures in Australia by commodity type

(Source: ABS Cat No. 8412.0)

<sup>2</sup> Service providers include; geological and engineering consultants, software providers, geochemical and geophysical contractors, drilling companies, analytical laboratories, heritage and environmental surveyors



**Figure 4 - Exploration expenditures in Australia by commodity type as a percentage of total**  
 (Source: ABS Cat No. 8412.0)



While it is true that the March quarter typically represents a seasonal low in Australian exploration expenditure primarily for climatic reasons, the ABS March report indicates that the falls incurred in the last quarter are abnormally high relative to those observable in the corresponding March quarters in the previous three years. This interpretation appears to be re-enforced by the recently released ABS figures for the June 2012 quarter. While original exploration expenditure rebounded in the June quarter, in seasonally adjusted terms the declining trend continued with an overall fall of



4.9% largely attributable to Queensland (12.6%) and to a lesser degree Western Australia (1.6%), where exploration for iron ore and gold recovered somewhat

On balance we believe that exploration expenditure in Australia may have peaked in the December 2011 quarter and may be entering into a period of contraction. This interpretation is reflected in the projected annual expenditure for 2012 displayed in both Figures 3 and 4.

This trend which, as we will see later, is attributable to a number of causes, has been to some degree masked from public and political perception by the persisting booming conditions in terms of multi-billion-dollar investments in the development and construction of mining projects, in some cases of massive scale, and by a healthy pipeline of committed future projects.

## Comparing Australian exploration expenditure and drilling trends

Drilling is the acid test of mineral exploration. It is the culmination of every exploration project and the means by which mineral discoveries are made or ground is sterilised. One may validly argue that the maximum value in the mining cycle is added in relative terms by the first mineralised intersection. Drilling is also fundamental in the delineation of new resources to maintain or ideally increase the national mineral resources inventory and in determining the degree of confidence in their quantification/classification.

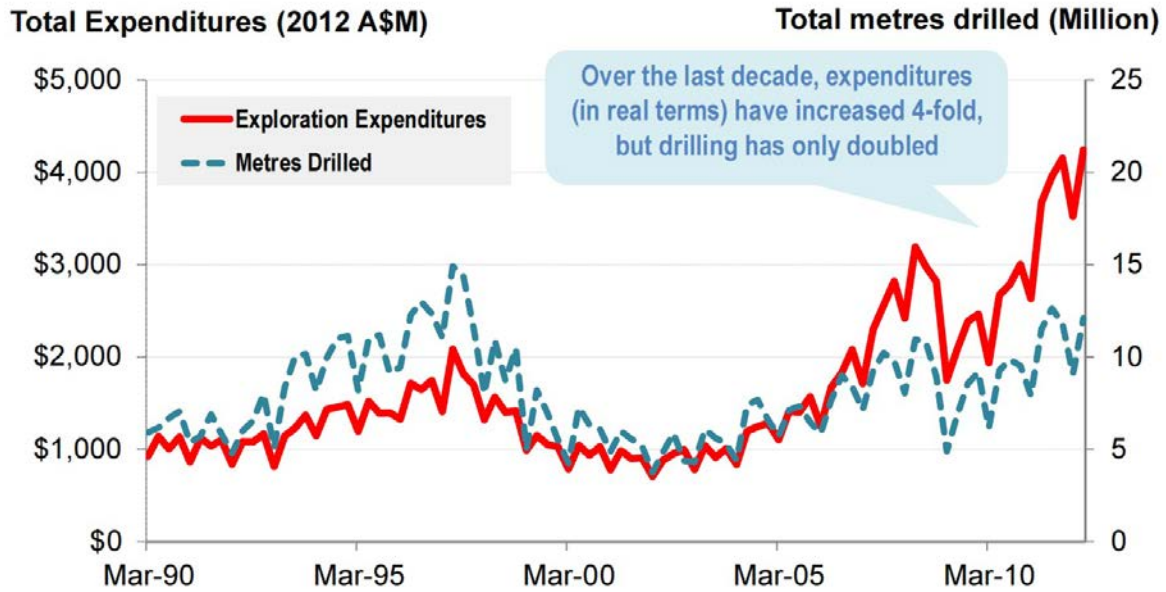
Thus it is fortunate that the ABS collects quarterly statistics about the amount of drilling carried out in Australia and whether drilling is directed to discover or test “new deposits” or to better delineate and quantify “existing deposits”.

Figure 5, however, clearly portrays a worrying situation whereby a fourfold increase in real investment in exploration over the last decade was not matched by a commensurate increase in the total metres drilled, which has only doubled over the same period.

### Figure 5 - Australian annual exploration expenditures and drilling: March 1990-June 2012

Note: Data is reported on an annualised basis (Source: ABS Cat No. 8412.0)





To the extent that exploration expenditure figures are in constant 2012 dollars, there appears to be a serious gap in the efficiency of our exploration programs. This may be due to a number of possible causes, including:

- Real escalation in average drilling costs,
- The higher unit cost of having to drill deeper targets (Figure 6),
- Real escalation in the cost of other necessary exploration activities relative to the cost of drilling, and
- Possible regulatory or other impediments to drilling.

Table 1 and Figure 6 suggest that, while gradually deepening, exploration in Australia is still primarily conducted at relatively shallow depths and this creates a concern that this search space may be becoming somewhat depleted.



**Table 1 - Average depth of cover for Greenfield and Brownfield Discoveries (in metres) in Australia: 1950-2012** (Source: MinEx Consulting © August 2012)

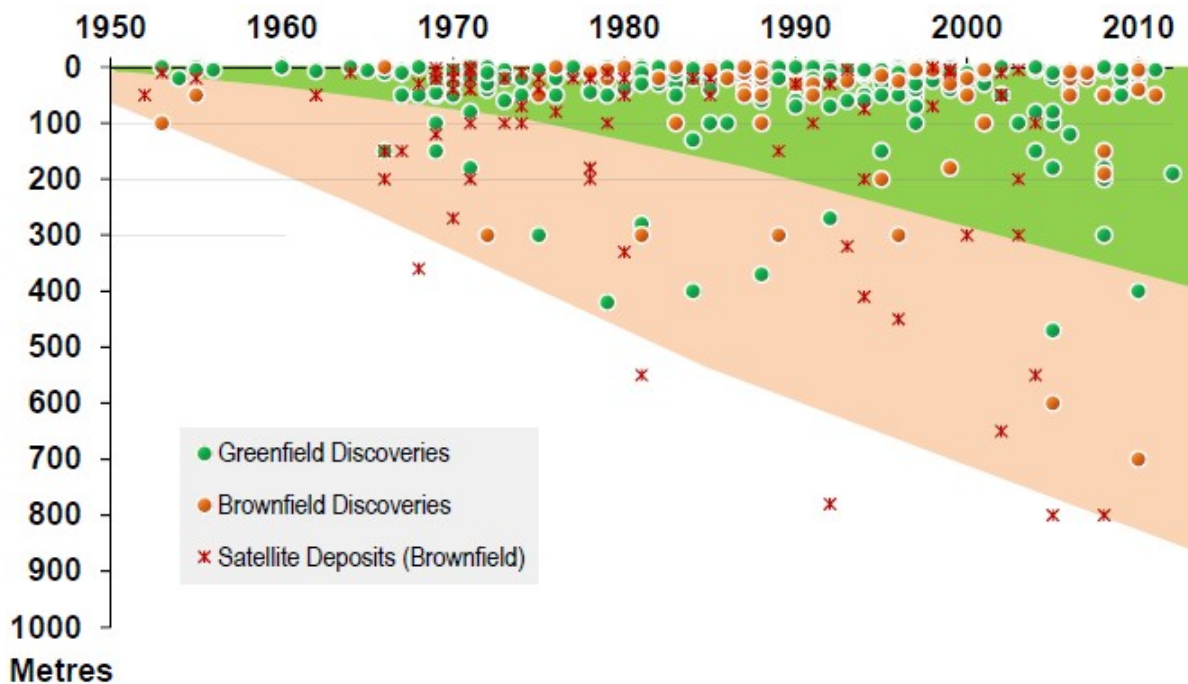
	1950-59	1960-69	1970-79	1980-89	1990-99	2000-12
Greenfield	5	35	45	52	27	64
Brownfield (including satellite deposits)	46	86	66	77	114	185

Irrespective of the causes there is clear evidence of deterioration in the efficiency of exploration which can only result in a lower rate of productivity in terms of metal discovered per dollar invested.

**Figure 6 – Depth of cover on mineral discoveries (1950 – 2012)**

Note: Satellite deposits supply ore to a central mill within an existing camp

(Source: MinEx Consulting © August 2012)



This deteriorating trend is likely to continue as the ABS March 2012 statistics show that the total 2.272 million metres actually drilled during the quarter (equal to 9.088 million metres on an annualised basis) represent a 23.1% decrease relative to the corresponding figure for the December 2011 quarter. This was well in excess of the seasonal difference between drilling in the December 2010 and the March 2011 quarters which amounted to 16.9% and is likely to represent a real fall of around 6%. The ABS figures for the June 2012 quarter indicate that, although drilling rebound in the quarter with emphasis on “new deposits”, total metres drilled recorded a a seasonalised fall of 1.1%.

The general declining trend in drilling is supported by data from Boart Longyear (the world’s largest contract drilling company) that reports that while its drill rig utilisation remains fairly steady, its products order backlog for drilling consumables (which are sold to the general exploration industry)

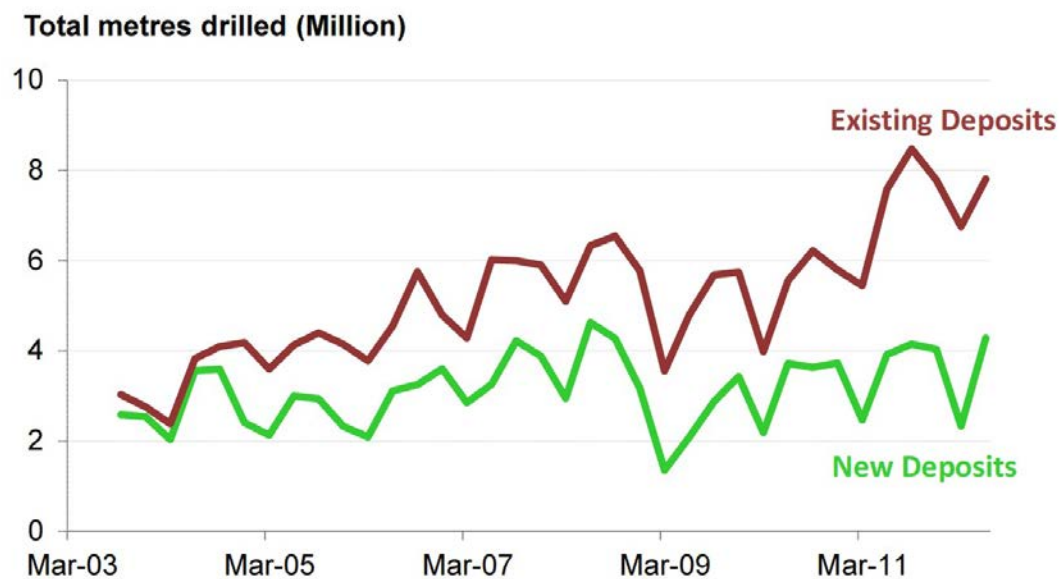


peaked in July 2011 and have fallen by about 30% in the June Quarter 2012 alone. It should be qualified that these results refer to international as well as Australian domestic sales.

Another worrying trend is that the proportion of drilling directed to “new deposits” has been falling relative to that of “existing deposits” as shown in Figure 7. The marginal contribution made to the resources inventory by mine site drilling is generally relatively insignificant. Similarly resource delineation drilling, while increasing the level of confidence in the resource classification, does not add to the metal inventory and indeed may in some case reduce it.

**Figure 7 - Level of exploration drilling in Australia: Sept 2003-June 2012**

Note: Data is reported on an annualised basis (Source: ABS Cat No. 8412.0)



## Greenfield versus brownfield exploration

In many cases, larger deposits tend to be discovered in the earlier greenfield stages of the exploration history of a geological terrane. This is because, by and large, the larger deposits have more extensive and therefore more easily detectable footprints. An example is Figure 8 that plots the size of successive discoveries against their respective date of discovery for the Kambalda nickel exploration camp in Western Australia.

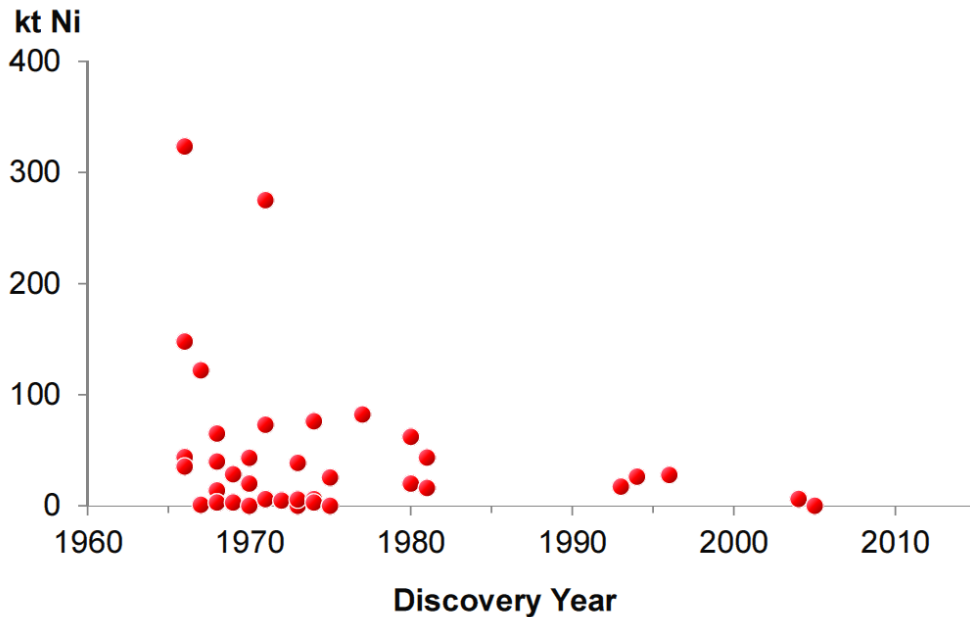
As a consequence, on average, brownfield discoveries in mature terranes, while more probable, are likely to make a less significant contribution to the metal inventory than greenfield ones, both on a per dollar spent and on a per metre drilled basis.

Obviously, as Figure 9 illustrates, it becomes progressively very difficult for the resource inventory of a company to grow if it has to rely on successive brownfield mineral discoveries in the same terrane and its ultimate survival would depend on discovering or being an early entrant into a new nickel camp as a result of Greenfield exploration.

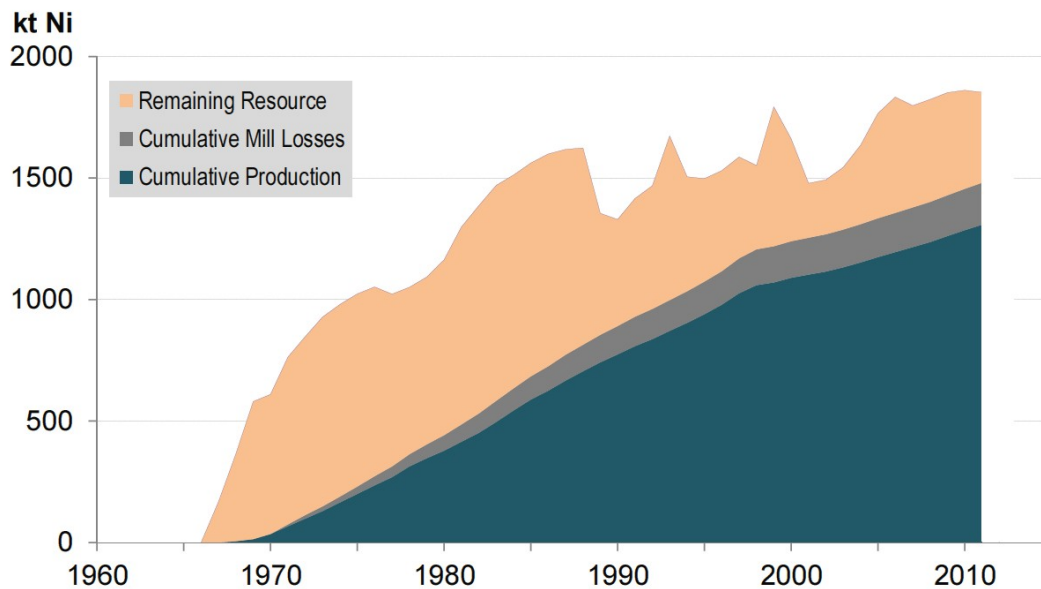




**Figure 8 – Size distribution of successive nickel sulphide discovery in the Kambalda Nickel Camp**  
 (Source: MinEx Consulting © August 2012)



**Figure 9 – Difficulty in maintaining a resource inventory in a maturing exploration terrane. Historic Resources and cumulative production for the Kambalda Nickel Camp**  
 (Source: MinEx Consulting © August 2012)



The terms greenfield, brownfield and mine site exploration as defined by Bartrop and Guj (2009) are frequently used in exploration literature. Greenfield exploration targets areas of conceptual potential where, however, the particular type of target is currently not or poorly represented and there is a relative paucity of mining infrastructure. Brownfield exploration, by contrast is carried out in terranes where the type of mineralisation targeted has already been discovered and where there is a reasonable level of existing infrastructure. Mine site refers to exploration conducted within a relatively close radius from an existing operation and attendant mining infrastructure.



MEG's classification of exploration stages includes three categories: grassroots, late stage/feasibility and mine site. The MEG's classifications straddle to some degree the greenfield and brownfield exploration boundaries.

An attempt has been made in the following illustrations to achieve a degree of consistency by splitting MEG's grassroots category into its greenfield and brownfield components by company type. The authors notionally assume that all of the expenditures by the majors and half of the junior companies' expenditure are directed to greenfield exploration, with the balance devoted to terranes that would be classified as "brownfields".

Reconciliation with the ABS' definition of "new deposits" and "existing deposits" is harder as the latter straddles the brownfield-mine site boundary.

Alarming the ABS' statistics show that exploration for "new deposits" fell by 23.2% (or -\$75.0 million) in the March 2012 quarter, that is to say at roughly twice the rate of the fall experienced on "existing deposits" exploration at 11.5% (or -\$81.3 million). This represents a real fall of around 5% in seasonally adjusted terms and continues the undesirable downward trend in the search for new deposits.

## Junior versus major explorers

The MEG's statistics categorise mineral exploration companies into four categories, namely:

- **Major** – a company with adjusted annual non-ferrous mining-related revenue of US\$500 million or more, which is considered to have the financial strength to develop a major mine on its own.
- **Intermediate** – a company with at least US\$50 million in annual non-ferrous revenue but less than the \$500 million major-company threshold.
- **Junior** – the main criterion for inclusion is that the company's principal means of funding exploration is through equity financing, although some companies may have limited revenues below the intermediate-company's threshold of US\$50 million. This category includes mainly pure explorers but also many aspiring producers that have not yet reached the "intermediate" threshold.
- **Other** – made up of Government-funded exploration programs. It also includes private and industrial companies. Relatively little exploration (2% of total) is conducted by this category.

Figure 10 provides a breakup of Australian mineral exploration expenditure for non-bulk commodities and excluding uranium, from 1996 till 2012 in terms of company types. As discussed above, exploration for non-bulk commodities in Australia represents approximately 48% of the total. The graph shows how real expenditure by majors has remained relatively constant over the period with the growth being provided almost exclusively by intermediate and more particularly junior companies.



**Figure 10 – Australian mineral exploration expenditure for non-bulk commodities and excluding uranium by company types (1996 – 2012)**

(Sources: ABS and © Metals Economics Group, Corporate Exploration Strategies 2011)

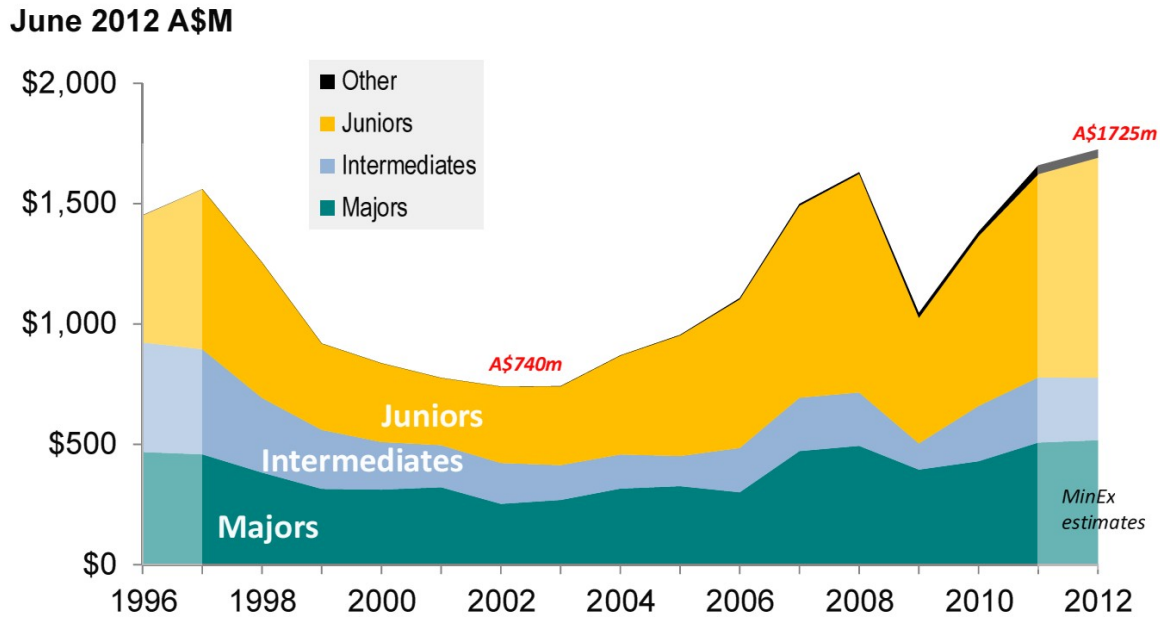
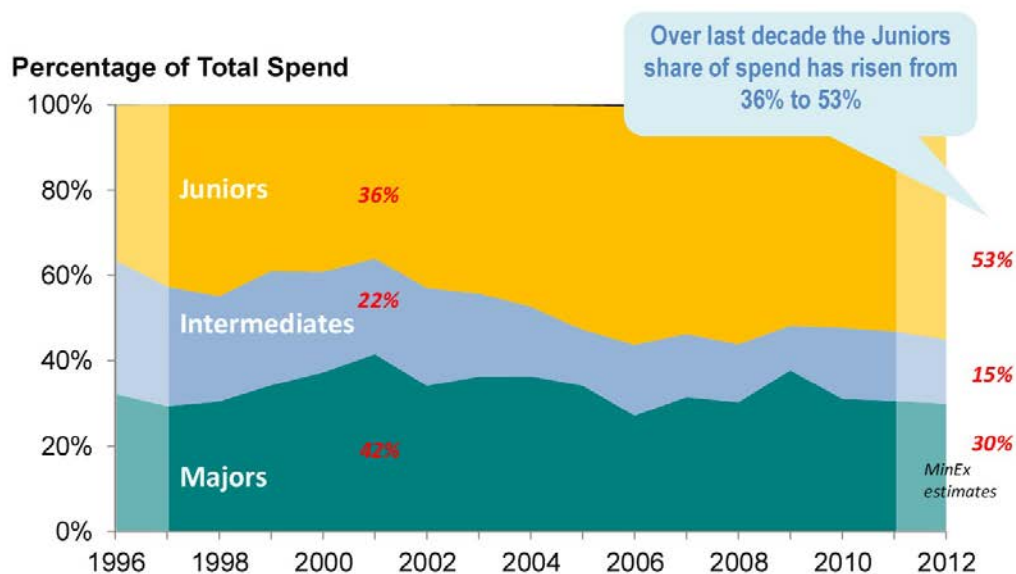


Figure 11 conveys the same message in percentage terms. The graph clearly shows how over the last ten years the proportion of exploration by junior companies rose from 36% to 53%, while that of intermediates fell from 22% to 15% and of majors from 42% to 30%.

**Figure 11 – Australian mineral exploration expenditure for non-bulk commodities and excluding uranium by company types as a percentage of total (1996 – 2012)**

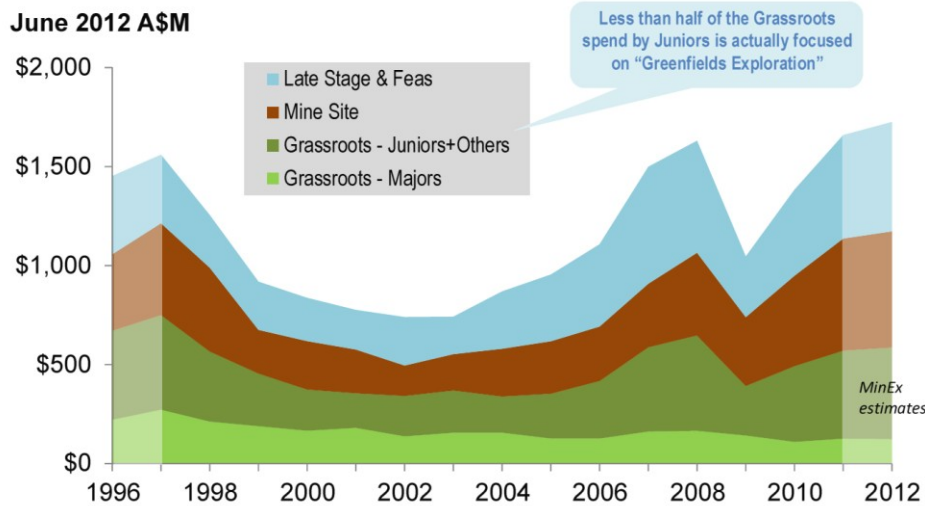
(Sources: ABS and © Metals Economics Group, Corporate Exploration Strategies 2011)





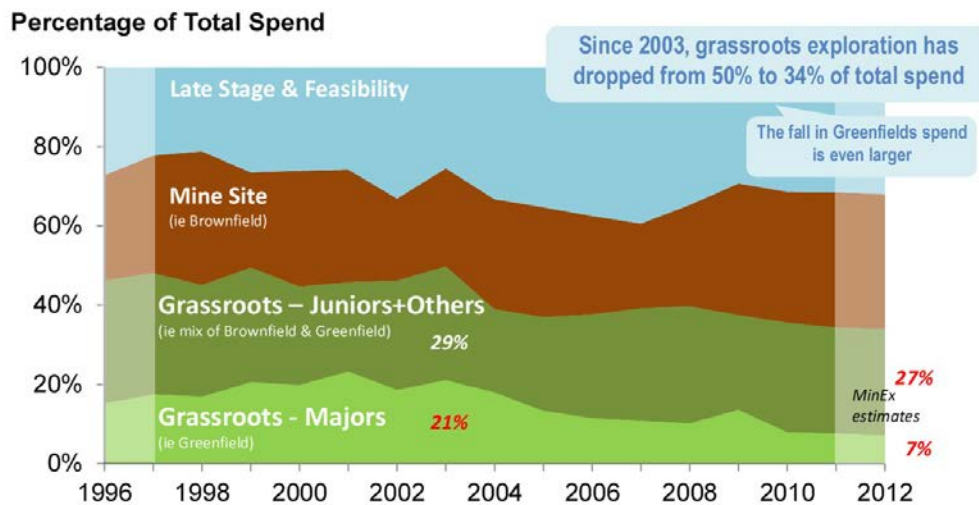
**Figure 12 – Australian exploration for non-bulk commodities and excluding uranium by project stage (1996-2012)**

(Sources: ABS and © Metals Economics Group, Corporate Exploration Strategies 2011)



**Figure 13 – Australian exploration for non-bulk commodities and excluding uranium by project stage as a percentage of total (1996-2012)**

(Sources: ABS and © Metals Economics Group, Corporate Exploration Strategies 2011)



The breakup of Australian exploration in terms of stages is provided in Figure 12, which shows how much of the growth in recent years is attributable to mine site and late stage exploration associated with feasibility studies.

By contrast, grassroots exploration as a percentage of total expenditure has been declining since 2003 from about 50% to the current level of 34% (see Figure 13). In this context it must be remembered that MEG’s grassroots definition includes a component of brownfield exploration and that purely greenfield exploration will constitute significantly less than 34% of total. As discussed later, this is significant – as it adversely impacts on the industry’s long term sustainability.

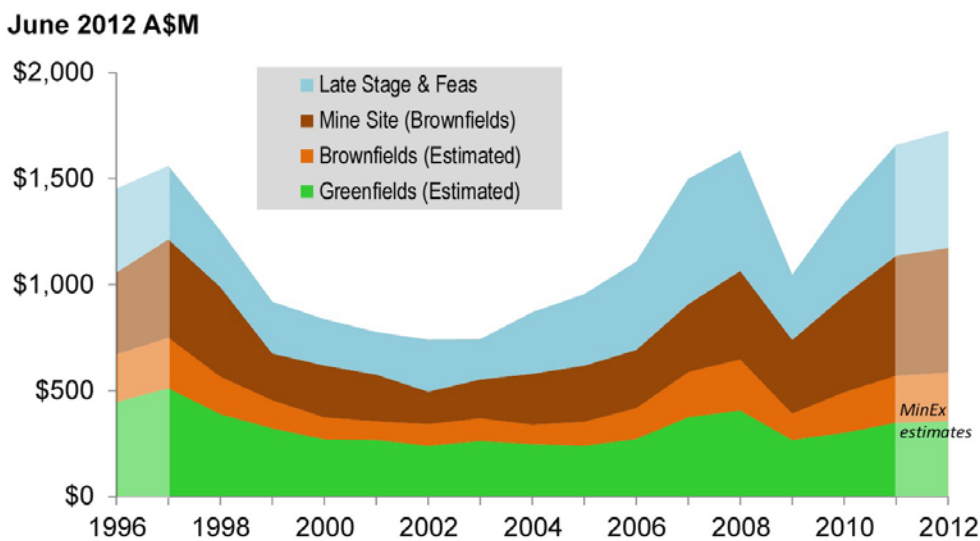


Figures 14 and 15 show the authors' estimates of the overall trend in domestic exploration expenditures by all Australian companies for non-ferrous minerals and excluding uranium broken down by greenfields and brownfields exploration. It is assumed that the whole of the majors' grassroots expenditure and half of the juniors' is on greenfield projects. The figures suggest that the overall share of greenfield expenditures in Australia has dropped from 35% to 21% in the last decade.

As already mentioned, this significant decreasing trend in greenfield exploration is worrying because maintenance of the mineral inventory to counteract mining depletion is quantitatively very dependent on the discovery of giant and major ore bodies typically found in the course of greenfield exploration.

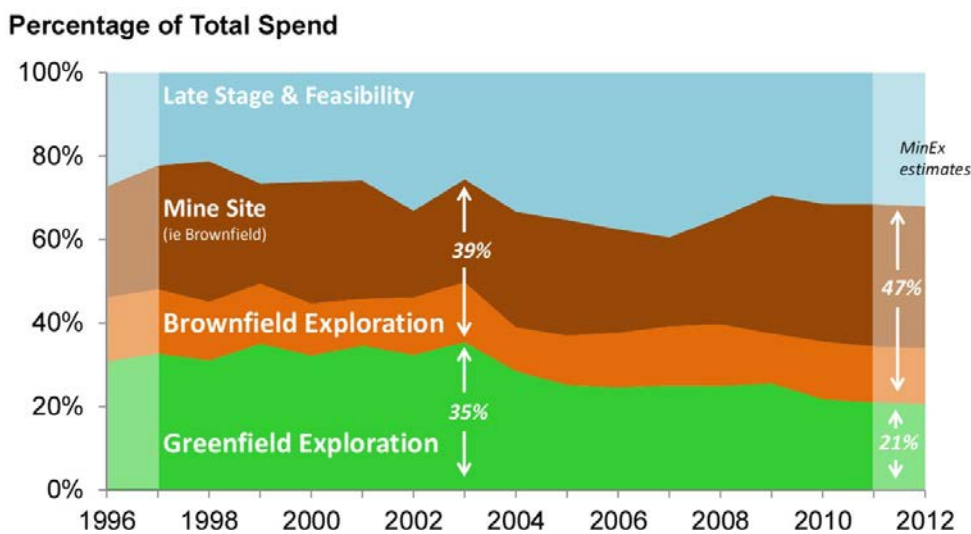
**Figure 14 – Breakup of Australian exploration for non-ferrous minerals excluding uranium**

(Sources: ABS and © Metals Economics Group, Corporate Exploration Strategies 2011)



**Figure 15 - Breakup of Australian exploration for non-ferrous minerals excluding uranium as percentage of total (1996-2012)**

(Sources: ABS and © Metals Economics Group, Corporate Exploration Strategies 2011)







## How is Australia faring in terms of discovery rates?

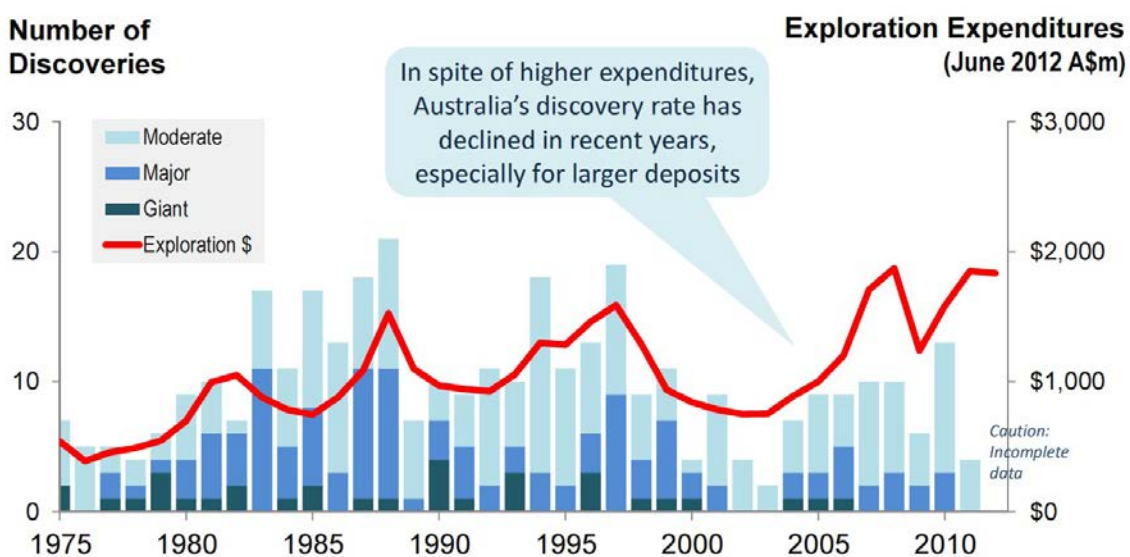
Figure 16 compares the number of discoveries over the period 1975 till 2011 with the total exploration investment in real 2012 Australian dollars. Discoveries and expenditures exclude bulk minerals such as coal, iron ore and bauxite. Discoveries are categorised as:

- “Moderate”: >100koz Au, >10kt Ni, >100kt Cu equiv, >5 kt U<sub>3</sub>O<sub>8</sub>
- “Major” : >1moz Au, >100kt Ni, >1mt Cu equiv, >25 kt U<sub>3</sub>O<sub>8</sub>, and
- “Giant” : >6moz Au, >1 mt Ni, >5mt Cu equiv, >125 kt U<sub>3</sub>O<sub>8</sub>

The graph of Figure 16 shows how in the mid-80s and mid-90s there has been a good positive correlation between increases in exploration expenditure and increased rate of discovery. By contrast increased exploration expenditure in recent years has been paired with a significantly reduced rate of discovery characterised by an absence of giant deposits and a paucity of major ones. While it is true that discoveries to some degree should lag exploration investment, and that it does take time to delineate and report a new discovery, this pattern seems to defy the statistical variability of discovery rates and points towards a discontinuity in the rate of discovery.

**Figure 16 – Comparison of exploration expenditure and mineral discoveries for non-bulk commodities including uranium (1996-2012)**

(Sources: ABS and MinEx Consulting © August 2012)



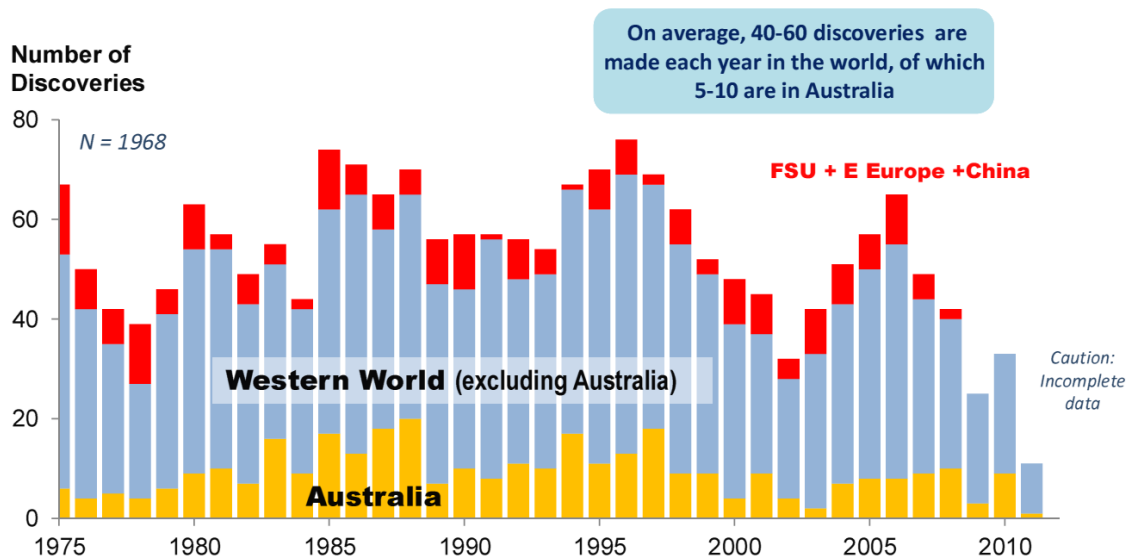
Asides from the issue of the real increase in the cost of exploration and drilling already discussed, one of the main causes of this decrease in the rate of discovery is the progressive maturing of Australia as an exploration area relative to less mature regions such as Africa, South America and parts of Asia. In this light it is more appropriate to compare, as in Figure 17, Australia's exploration performance with that of more mature jurisdictions in the rest of the western world, in the former Soviet Republic and in China.



Table 2 shows how until recently Australia’s track-record in terms of making moderate and major discoveries has been good. By contrast, as highlighted at the bottom of Table 2, it is getting very expensive to make a giant discovery in Australia. This is one of the reasons driving minerals exploration by Australian companies to less mature regions, particularly Africa. At last count there were some 325 Australian based companies operating about 850 projects (45 of which operating mines) worth around \$40 billion in 42 out of 54 African countries.

**Figure 17 – Australia’s performance in terms of mineral discoveries compared with the rest of the Western World and the former Soviet Union plus China (1996-2012)**

(Source: MinEx Consulting © May 2012)



**Table 2 – Australia’s performance in terms of mineral discoveries and unit cost of discovery by deposit size over the last three decades** (Source: MinEx Consulting © May 2012)

Period	No of Discoveries in Aust / WW	Australia’s share of Discoveries	Australia’s share of WW Exploration Expenditure	Cost per Discovery (US\$2011m)	
				Australia	Rest of WW
<b>Moderate Discoveries #</b>					
1980-89	125 / 520	24%	17%	\$55m	\$85m
1990-99	116 / 559	21%	19%	\$70m	\$79m
2000-10	73 / 412	18%	13%	\$126m	\$189m
<b>Major Discoveries #</b>					
1980-89	65 / 260	25%	17%	\$106m	\$171m
1990-99	49 / 313	16%	19%	\$165m	\$133m
2000-10	25 / 220	11%	13%	\$367m	\$329m
<b>Giant Discoveries</b>					
1980-89	10 / 55	18%	17%	\$688m	\$742m
1990-99	13 / 87	15%	19%	\$622m	\$475m
2000-10	3 / 44	7%	13%	\$3056m	\$1564m

# Note: Includes discoveries from the larger size range.

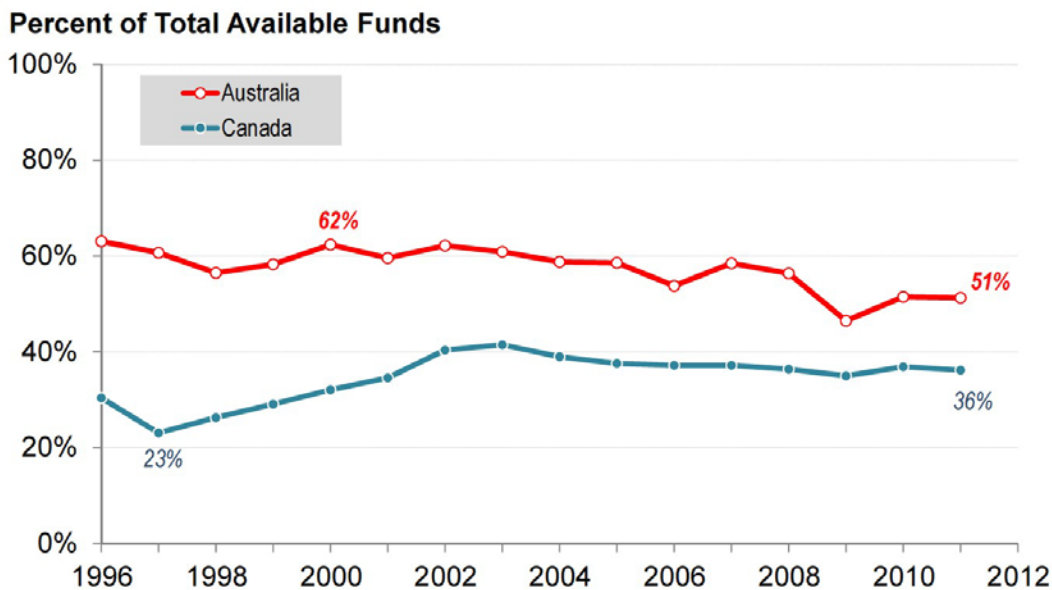
Unlike Canadian companies which, while strongly foreign orientated, have nonetheless maintained a steady rate of domestic exploration investment (around 36%), Australian companies, which were



originally primarily orientated towards domestic exploration, have been steadily moving their focus offshore. In the last ten years the proportion of their exploration funds deployed domestically has fallen from around 62% to 51% and this downward trend is expected to continue (Figure 18). An opinion survey conducted by Scope Systems at the Africa Downunder Conference, recently held in Perth, "... found 86 per cent of delegates expected investment in Africa by Australian mining companies to either increase slightly ( 41.9 per cent) or increase significantly (44.2 per cent) over the next 12 months" (Sas, 2012).

**Figure 18 – Percentage of Australian and Canadian exploration investment devoted to domestic exploration (1996-2012)**

(Source: © Metals Economics Group, Corporate Exploration Strategies 2011)



### Availability of equity funds for exploration is getting tight

Equity funding is the blood for mineral exploration. Even the exploration budget of relatively profitable mineral producers appears to be a function of the degree of availability of equity funds and market sentiment. Exploration is often considered a discretionary item of expenditure rather than a critical necessity to their sustainability. Financial markets have become very tight with the advent of the Global Financial Crisis and continue to be spooked by persistent financial instability in the Euro zone. Compounding this are concerns over the future growth prospects for China and related consequences in terms of demand for Australian metals.

Although the number of small cap IPOs on the Australian stock exchange increased by 10% in 2011 to 92 listings (78 of them from junior mining companies (Trench, 2012)), the amount raised was down by 17% on the previous year (HLB Mann Judd, 2012). The average level of funds raised by small caps was at its lowest level for five years at \$6.8 million. Sixty nine per cent of all 2011 listings produced average losses of 13% by the year end, which does not bode well for future equity floats.





Our frequent contacts with junior companies and their representative bodies confirm a picture of great difficulties in raising equity with consequent higher levels of dilution of ownership and mounting financial pressure.

As it is likely that these unfavourable market conditions will persist over the immediate and possibly mid-term future, one can expect that exploration companies will go into a cash conservation mode thus contributing to a contraction in exploration activities.

## **How sustainable is the mining industry in Australia?**

The Australian exploration trends towards lower efficiency, decreasing discovery rates, shift of focus from greenfield to brownfield and mine site exploration and, difficulty in raising equity funds and their redirection offshore will ultimately result in decreasing increments to our national mineral inventory. Although current reserves and resources appear healthy, it is paramount that, if the industry is to be sustainable, new mineral discoveries should at a minimum compensate for the progressive depletion of current reserves as they are progressively mined.

Assuming for a moment that no new discoveries were to occur how long would it take for Australia to fully deplete its current inventory? Figure 19 shows that, based on current reserves and resources, about half of current major non-ferrous mines would be exhausted with 7 to 18 years. This is, of course, an unlikely scenario as, aside from new discoveries, resources will continue to be found in most of the existing mines thereby extending their life. However, as noted earlier in the case of Kambalda, it becomes progressively more difficult to replace the ore mined as the camp becomes more mature. It is a “given” that all mines/camps will eventually run out of ore. The key to the industry’s sustainability is the need to re-invigorate the portfolio by finding major new camps and this involves greenfield rather than brownfield exploration.

It is noted that the median age of the 41 major mines<sup>3</sup> listed in Figure 19 is 19 years, and that 8 of these mines are over 40 years old. It is also important to note that many of our current mines are exploiting deposits that were found decades ago.

The challenge for Australia is that while a number of mainly brownfield discoveries and rare greenfield ones will continue to be made, these will be progressively smaller and of lower grade/quality or requiring higher unit mining cost. There is in fact no room for complacency.

On the redeeming side, however, is the fact that brownfield projects close to existing infrastructure are easier to fund and generally involve shorter pre-production lead times, on average 6 years as compared to 8 years for greenfield discoveries (Figure 20). Even so, the challenge for industry is the fact that our existing mines have a median life expectancy of 7-18 years and that it takes on average, 7 years to convert a new discovery into an operating mine. Consequently, to be sustainable in the longer term, the mining industry needs to continuously build up a strong pipeline of projects at or close to the development stage. This, in turn, is only possible on the basis of an active and successful exploration sector feeding the pipeline.

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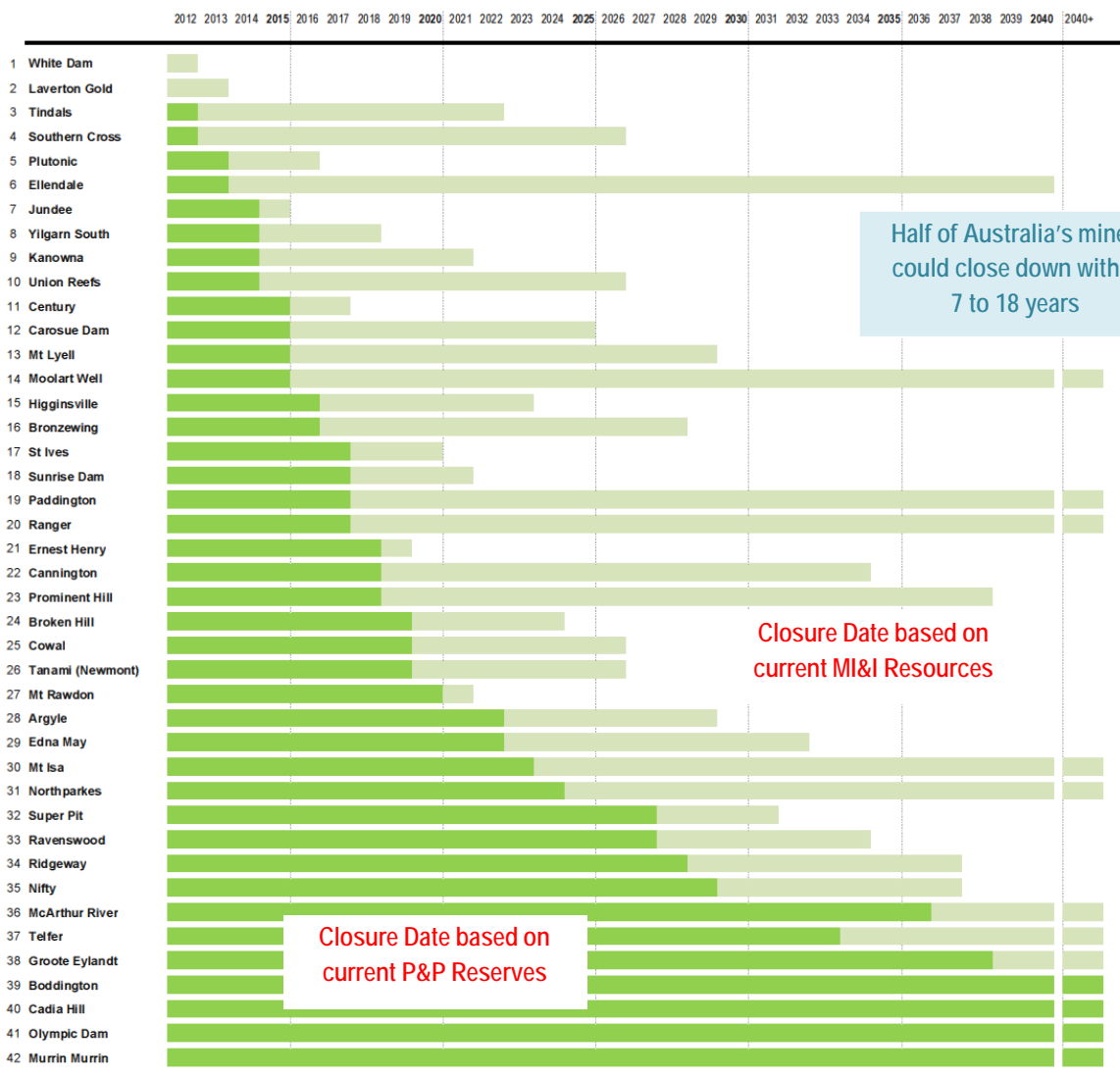
<sup>3</sup> In terms of Australia’s total production, the 41 mines reported in Figure 19 accounted for 86% of gold, 88% of copper, 82% of zinc and 91% of lead production in 2011



**Figure 19 – Time to exhaustion of Australian non-bulk commodity mines based on current reserves, resources and rate of exploitation**

Note: The notional mine life was calculated by dividing the current published P&P Reserves and MI&I Resources by the production rate reported for 2011

(Source: MinEx Consulting © August 2012)



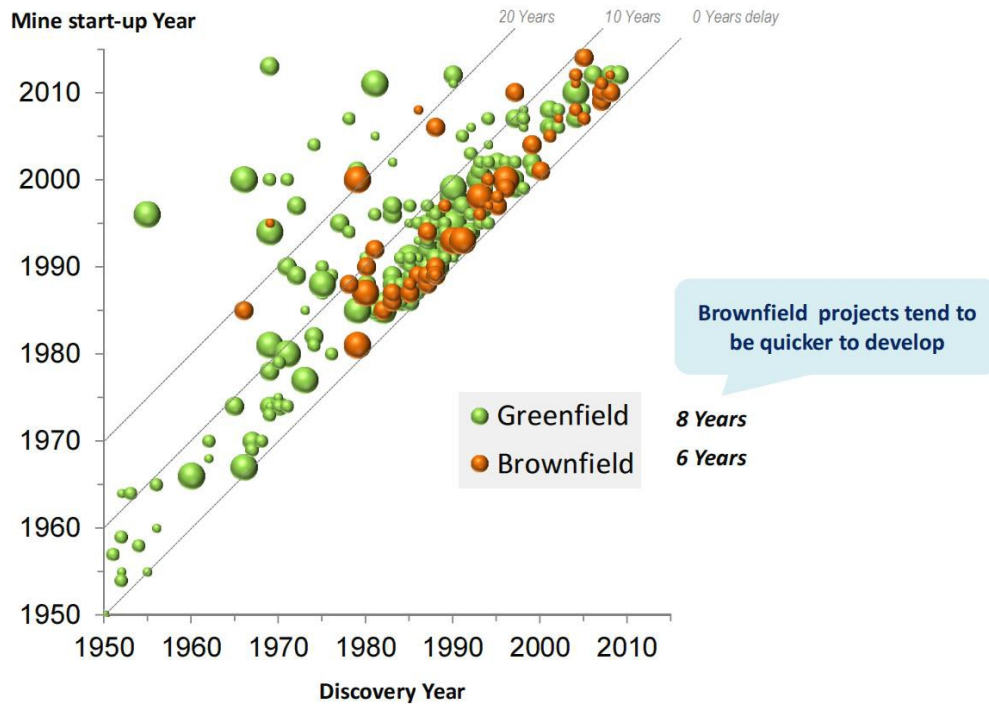
Half of Australia's mines could close down within 7 to 18 years

Closure Date based on current MI&I Resources

Closure Date based on current P&P Reserves



**Figure 20 – Distribution of the pre-production lead time for Australian Greenfield and brownfield mineral discoveries (Source: MinEx Consulting © August 2012)**



## Perceptions versus reality: The Fraser Institute 2011 survey

Up to this point we have dealt with some factual measurements and trends of investment in and performance of the mineral exploration industry. It is now interesting to see how these appear to influence the perceptions of investors. One way to address the topic is to determine whether trends in perceptions of 94 respondent mining companies, as captured by the Fraser Institute Survey, are consistent with the factual picture we depicted so far. To do so we have analysed changes in the investment attractiveness of the various Australian states relative to alternative exploration destinations throughout the world over the period 2009 till 2011 based on a number of specific criteria as well as on a composite policy/mineral potential criterion.

Industry's perceptions appear to be generally realistic and consistent with the factual factors discussed in this paper.

Figure 21 shows how Australia's attractiveness based on the mining taxation criterion has deteriorated between 2009 and 2012 for all states except the Northern Territory, probably on account of its relative fiscal stability.



Figure 21 – Comparison of the results of the Fraser Institute 2009 and 2011 surveys relative to taxation regimes

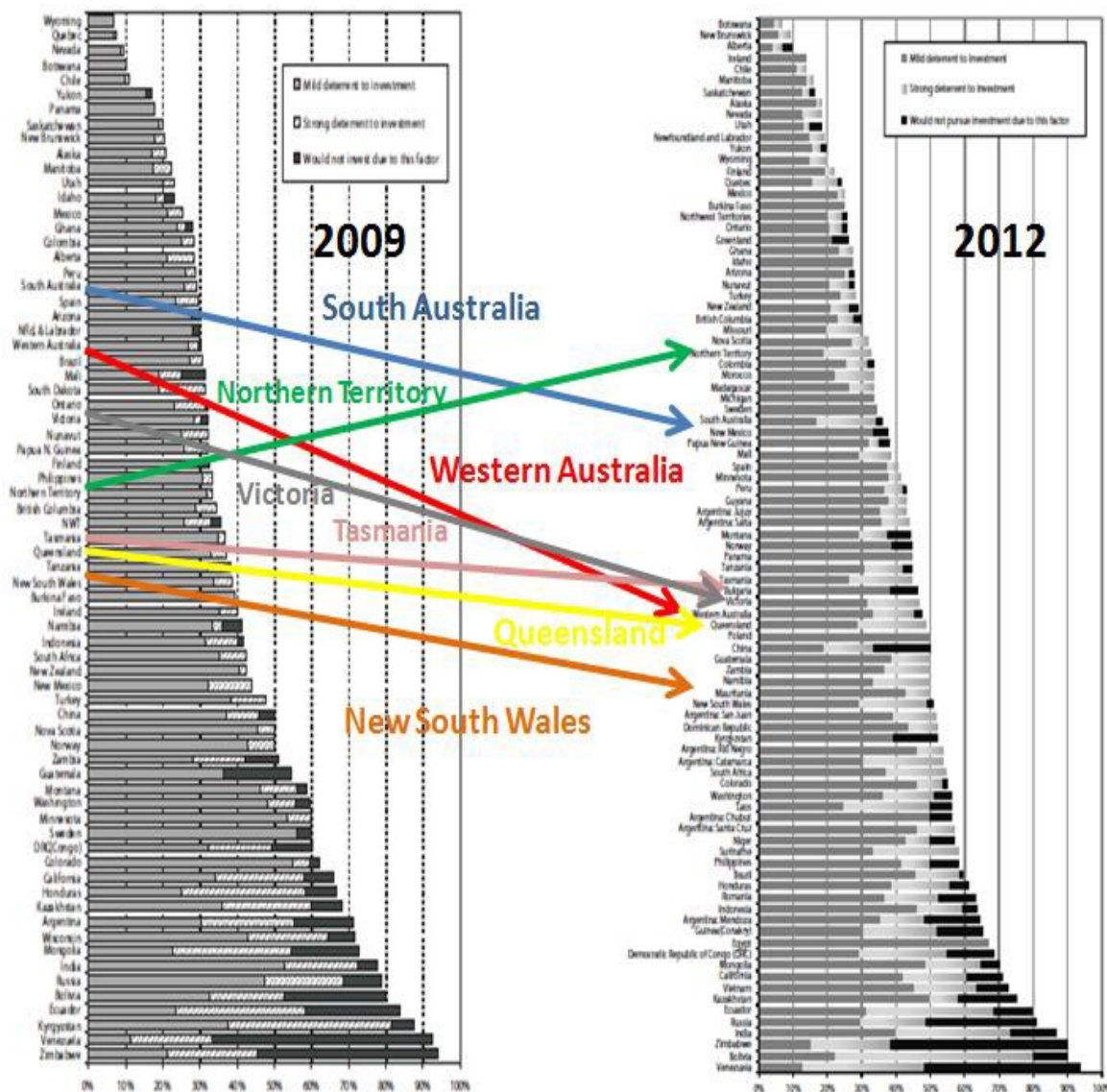
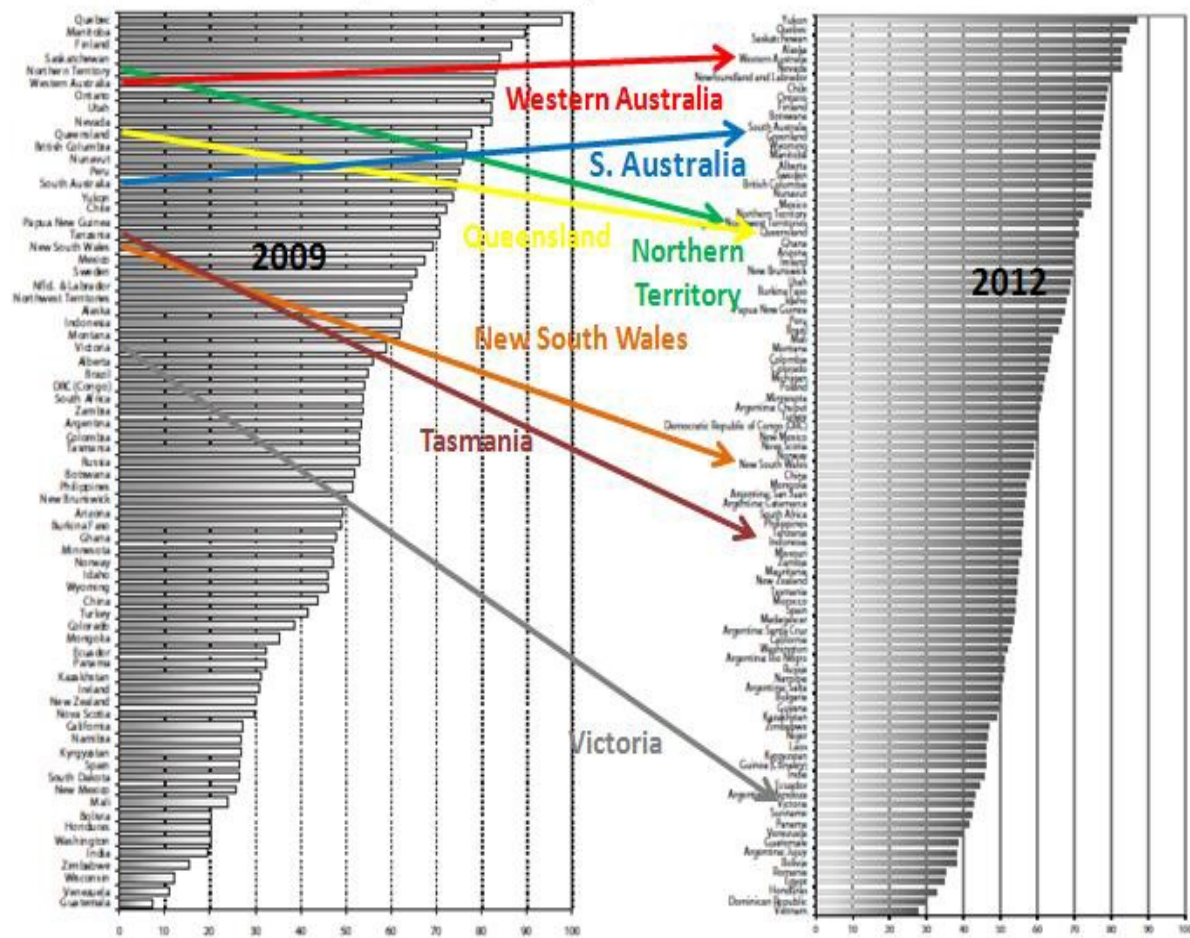


Figure 22 however indicates that over the same period Western Australia and South Australia managed to lift their desirability based on the composite policy/mineral potential criterion, probably on account of their significant government exploration incentives initiatives and some recent discoveries enhancing industry perceptions about their prospectivity.





**Figure 22 – Comparison of the results of the Fraser Institute 2009 and 2011 surveys relative to the composite policy/mineral potential criterion**



## Conclusions

World mineral exploration expenditure on non-ferrous metals has been recovering strongly from its low in 2009 and is back on the rising trend which commenced in 2002.

Australian exploration expenditure, while increasing in absolute terms, has continued to lose ground relative to other destinations in the world and now stands at a mere 12% of the total down from 21% in 1996.

Australian exploration expenditure and drilling fell during the March 2012 quarter in all states and for all commodities, particularly for iron ore and coal. Falls were greater in Queensland and Western Australia, which is probably attributable to the impending introduction of the MRRT and gradual softening of iron ore and coal prices. This trend appears to have continued on a seasonalised basis in the June 2012 quarter figures.

The 5-10 year outlook for these iron ore and coal is weak and consequently this will adversely impact on the level of activity for service providers and employment prospects in general.

There were also significant falls in the March 2012 quarter in the amount of drilling carried out particularly on “new deposits”. This continues a gradual trend of redirection of exploration and



drilling from greenfields to brownfields and bulk commodities, even though there is an indication of some improvement in the June 2012 quarter.

The number of small cap IPOs on the Australian stock exchange increased by 10% in 2011 to 92 listings (of which 78 were from junior mining companies), but the amount raised was down by 17% on the previous year.

The average level of funds raised by small caps IPOs was at its lowest level for five years at \$6.8 million.

On the basis of all these factors it is possible that the Australian exploration investment may be peaking and that the industry may now be entering a period of contraction.

Trends in decreasing efficiency and lower discovery rates continued. For example over the last ten years exploration investment in Australia increased fourfold in real terms but the total of the metres drilled only increased twofold indicating that exploration costs are escalating significantly in real terms.

This is also reflected in the decreasing number of discoveries per dollar over time for discoveries of all sizes, and particularly for giant discoveries which decreased because of the progressive maturing of some of our exploration terranes.

The gradual shift of funding from greenfield to brownfield exploration, while understandable in terms of short-term profitability, is worrying as in the long-run it will affect the metal contribution to the national resource inventory and with it the sustainability of the Australian mining industry.

It is estimated that, in the absence of new discoveries and ore body extensions, based on current reserves and resources, about half of Australia's non-bulk commodities mines would be exhausted between 7 and 18 years.

The Australian public at large and some of the politicians may not appreciate that the mineral exploration sector is experiencing mounting technical and financial pressures because they are masked by a perception that mining is in a phase of significant boom. This is, of course, true with regard to the frantic rate of development and construction of a long list of committed multi-billion dollars resources projects, but it is far from being the case for the mineral exploration industry. There is little room for complacency in this sector.

The question then still remains – “where will Australia's future mines come from?”



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